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Free Skin Grafting in the Mouth.—*Eby.*

Selection of Artificial Teeth.—*Lowery.*

Preventive Dentistry.—*Bryan.*

Dental Service for the Other Eighty Per Cent. —*Millberry.*

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Dr. Otto U. King, Secretary-Editor, National Dental Association, Honored Guest at Banquet, Michigan State Dental Society's Annual Meeting, Detroit, April 13, 1920.

THE JOURNAL
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Original Communications.

FIXED BRIDGE-WORK.

By Edward T. Tinker, D. D. S., Minneapolis, Minn.

(Read before the National Dental Association at Its Twenty-third Annual Session, New Orleans, La., October 20-24, 1919.)

THE study and application of crown and bridge restoration, both of the fixed and removable type, is one of the most fascinating in our line of endeavor, and I know of no other branch of dental effort that is accomplished with a greater degree of satisfaction to both the patient and operator, than the taking of a badly mistreated mouth, infected with diseased areas and disfigurement, and restoring the same to health and an approximation of its original beauty.

To the dental profession this subject is of paramount importance and, as we are all aware, great damage has been done by its faulty construction and unwise application.

Chiefly among the causes for such disappointing results have been: *First.* Faulty, and in many cases, no attempt at diagnosis and prognosis. *Second.* Failure to remove foci of infection and inattention to treatment and care of the investing tissues and mouth sanitation. *Third.* Disregard for tooth form. *Fourth.* Absence of proper embrasures. *Fifth.* Interproximal spaces. *Sixth.* Faulty occlusion and articulation

Before enlarging upon the foregoing, let me say that I believe we may divide the dental profession into three classes: *First.* Those who are partisan to the point of exclusion of all other types of reconstruction excepting fixed bridgework. *Second.* Those who are just as

partisan in their adherence to the removal type of work. *Third.* Those who use both types and endeavor to apply the one which, in their judgment, is most applicable to the particular case presented. I believe that most of the profession in our part of the country belong to the third classification, using fixed bridgework whenever we can apply it with safety, applying the removable type in cases beyond that line.

This paper will deal almost entirely with the former, as a discussion of both types of restoration would cover too large a field to be touched upon in one evening.

Judgment in any given case is most essential and is based upon a thoro diagnosis and prognosis. In arriving at such an understanding a complete X-ray examination should first be made. These radiographs should be studied for foci of infection, the extent of bone destruction in pyorrhea, as well as for determining the thickness and strength of the alveolar process surrounding the teeth to be used as abutments. Upon this one condition will largely depend your prognosis. Edentulous spaces must be examined carefully for broken roots and necrotic sockets remaining from previous extractions where proper curettement was not resorted to, infection still remaining. Radiographs are also valuable in disclosing hidden decay, especially under old fillings and crowns, at and beneath the gingiva. In addition to this examination, study models should be made and mounted upon an anatomical articular. These models will reveal the forces of occlusion and articulation; so a decision can be made as to whether the bite should be opened, whether certain teeth will require dressing down on the cusps, or a combination of both to give a balanced articulation.

Malocclusion must be corrected to the point of removing sound teeth, should such teeth be so out of line or elongated from disuse as to make a correct occlusion and articulation impossible. In many of these cases an orthodontist is of valuable assistance.

In all of our procedure we must never lose sight of the fact that we are dealing with the mouth as a unit, each tooth being but a part of such and having no value when it obstructs the function of the whole.

The foregoing principles are fundamental and necessary to the successful use and longevity of fixed restorations and I may say apply equally to the removable type. Couple the information so gained with clinical evidence and we have a knowledge of the case upon which to proceed. In fact, you have a picture of the finished product in your mind, without which no one can be successful to the fullest extent.

Not only is it necessary to eradicate all foci of infection, but all deposits must be removed, faulty contacts and overhanging margins corrected, and, in fact, the elimination of everything that may make trouble for the investing tissue is imperative.

The gum tissue shall, by proper prophylaxis and massaging, be placed in a healthy condition, and the patient be instructed how to keep it so. Furthermore, the restoration we place, whether it be fixed or removable, must be so constructed that it may be kept sanitary by the wearer.

By faulty articulation we mean an articulation that is not well balanced, where, in the lateral and forward thrusts of the mandible, certain teeth bear all the force, and should such teeth be a part of the bridge, lameness is the result, causing an inflammatory condition of the peridental membrane, gingivitis and subsequent loss of such teeth. This point is

one to be largely determined when making your diagnosis upon study models.

Necessary to a proper occlusion and articulation is correct tooth form and herein lies one of our weakest points. The more we study the human tooth the more we must realize how far our best efforts fall short of reproducing it. Occlusal planes especially, must be properly reproduced in order that our bridges functionate as they should. The distance from the tip of the buccal to the tip of the lingual cusp is, in all molars and bicuspids unless they be worn down by abrasion, practically the same as the longest diameter of the tooth bucco-lingually at the cemento-enamel junction. How often do we see this rule of nature totally disregarded, not only in crowns and bridges but in operative dentistry as well. The result is that we have unnatural forces brought into play, not only by pounding on occlusal planes but by striking on the contour of the tooth buccally to the high point of the cusps on the lower teeth and lingually to the high point of the cusps on the upper teeth, giving the patient a sense of lameness, and in many instances producing symptoms akin to alveolar abscess, resulting ofttimes, if not corrected, in premature loss.

Many cases of bridge-work are constructed without regard for the embrasures. In fact, we often see soldered contacts as broad bucco-lingually as the abutments and dummies are themselves. Most of these cases are a straight line mesio-distally on the lingual surface from abutment to abutment. When we realize what strain we are placing on these abutments by tying them together and how we double up the stress under which they must labor, we will recognize the necessity of giving them every advantage possible. That advantage is largely made possible by utilizing nature's embrasures. They form escapements thru which food passes, during mastication, immediately relieving the teeth of their stress. In bridge construction these embrasures should be exaggerated, and the transverse fissures should always divide the marginal ridge lingually to the contact point and be carried well to the gingiva. The food escaping thru the embrasures massages the gum underlying and aids materially in maintaining health of that tissue. For illustration, in operative dentistry where crowns and inlays of otherwise correct construction but having unbroken marginal ridges are used, diseased septal tissue is the result and is corrected by cutting the transverse fissure thru these unbroken ridges allowing excursion of food for stimulation of underlying tissues. Application to this one principle will go a long way toward attaining a result.

Very little solder should be used in uniting dummies with the abutment. The soldered joint should be small and circular in form, the contact point being its center, and should occupy only the occlusal third of the interproximal space.

Dummies should be tapered to a gingival end in excess of the natural teeth they replace, and are more sanitary if the tip end be made of highly glazed porcelain, which should rest preferably on the crest of the ridge, or slightly to the buccal or labial, as the case may be. Enlarged interproximal spaces are obtained thru which the bristles of a toothbrush and tape are readily passed, and this, coupled with the fact that the gum tissue takes more kindly to highly glazed porcelain than metal, makes for a healthy condition.

To attain the foregoing results, I wish to mention the necessity of carefully taken impressions as being of vital importance in the making of bridge dummies. In all bridge construction, especially where the cuspid and incisal regions are involved, a complete impression

and models must be made of both the upper and lower jaw, for the reason that in making an anterior case, a good hard model of either cement, amalgam or some equally dense material, of the molar region above and below is just as essential as of the opposing teeth, for the reason that to obtain a balanced articulation the molars on the opposite side are going to determine the length of your construction and cusp inclination.

The methods of operative procedure also have a bearing on the success of the operation of tooth preparation. Conductive anesthesia is used wherever the work cannot be accomplished without too much discomfort to the patient, but whether operating under anesthesia or otherwise, care must be used that the tooth in question does not become overheated, and more especially must this be guarded against when it is under an anesthetic, for the reason that the sense of pain is not present to give its warning.

The proper lubrication is best attained by a stream of water of 110 degrees Fahrenheit, thrown upon the stone and tooth while operating, thus keeping the entire field at the same temperature.

During certain phases of the operation, compressed air is preferable, for the reason that the vision of the field is clearer than with the stream of water, but generally speaking, the major part of the time, I prefer the warm water to the air.

During the interval between the preparation and the setting of the restoration, the teeth in question should always be protected. This protection is best accomplished by adapting a seamless copper or aluminum band to the tooth and filling the same with pink base plate guttapercha.

The pain incident to cementation is frequently of a very severe nature, ofttimes requiring a number of days before returning to normal. Here is where I have found Novocaine anesthesia and in many cases Nitrous Oxide analgesia of very great value, holding the teeth without sensation during the setting of the cement, and by the time sensation has returned, the free acid which is the active irritant, has been taken up, thereby obviating to a great degree any subsequent hyperaemic condition of the pulp.

Another and equally important advantage gained by so handling these sensitive cases during cementation under anesthesia, is that more nearly absolute dryness can be maintained and the tooth surfaces can receive more aseptic treatment and varnish applications than would be otherwise possible.

Fixed bridges when properly constructed and attention given to detail and applied in small spans to abutments supported by strong alveolar process, and of sufficient length of crown to afford frictional resistance necessary to stand the tortion under which it labors, we know are good for many years with freedom from trouble, and with health and comfort to the wearer, and I am far from convinced that under conditions stated, have we any other type that has proven its superior, allowing us to retain the vital pulp which we must admit is the most aseptic root canal filling.

Until such time when we can assure the patient of our ability to remove the dental pulp and treat and fill the root canals without the possibility of its becoming a foci of infection, we have no right to do so simply to make possible the application of a mechanical principle.

The technical section of this paper I will illustrate with lantern slides and will deal entirely with bridge attachments for vital teeth, and porcelain root tipped dummy construction.

The idea originated from a paper given by the late Dr. Wassall, of Chi-

cago, in Washington about fourteen or fifteen years ago on the subject: "Gold Shoulder Crowns." These crowns were placed upon devitalized teeth, using a burnished matrix, and building the contour by the inlay method of that day. The advantages of this crown over the banded type are mainly continuity of crown with root surface, leaving no hidden recesses to lodge debris, setting up an irritation to the soft tissues, in fact prophylaxis can be carried on equally well after their insertion as before.

The enamel does not have to be scaled in its entirety from beneath the free margin, thus obviating the danger of injury to the peridental membrane, and were it possible of accomplishment without this danger, the replacing of the crown in the same relation to the gingiva, is a difficult procedure, to say nothing of the deleterious effect metal has when placed so far beneath the soft tissue.

When Dr. Taggart gave us his invention, I found it was feasible to apply the idea and its modifications indiscriminately to vital teeth.

Inlay attachments have their place in this field, but I believe they are well enough understood to make their elaboration unnecessary, concentrating the discussion on the gold jacket crown, both full and three-quarter.

We can place porcelain in close proximity to the pulp with comparative safety, on account of the non-conductivity of the material, where, were we to use gold in the same manner, negative results would surely follow. A wide shoulder on a porcelain jacket preparation, I believe, is to be desired so that the crown may have sufficient body for strength and reproduction of shades. With the gold jacket preparation both full and partial, neither of the requisites mentioned have to be considered. The question of bulk for strength is well taken care of by the removal of the contour sufficient to allow the drawing of the wax crown and the placing of the gold cast duplicate, from and to the line where you have determined the gingival margin shall be, providing a casting gold of sufficient rigidity is used. Simple restoring of the contour will give all the strength needed, the shoulder being merely a definite line or slight indentation around the tooth at that point.

Its main reason for being there is to enable the operator to obtain a flush joint necessary to the finished product and carrying on of future prophylaxis. Should I dwell upon this point during my lecture and clinic, it will be for the reason that conservation of tooth structure is all important, and as a result of my experience in teaching this work, I know it is the reason for most of our failures.

We have been criticized by dentists not familiar with our technic, in the use of the full crown on a vital tooth, their argument being that it cannot be applied to one with a bell-shaped crown without consequent dissolution of the pulp. If we were guilty of the accusation we would fully agree with them, but our answer is that a bell-shaped tooth never calls for a full preparation, they being of sufficient length gingiva-occlusally to give resistance necessary without carrying margins buccally and lingually toward the gingiva farther than the height of the contour, never endangering the horns of the pulp. It is least used of any of the attachments and is applied to that type of tooth so short from the gingiva to the occlusal that we must utilize every part of the frictional wall it affords to give resistance to the tortion under which it is placed as a bridge abutment.

Figure 1.—Its application includes a small percentage of third molars, second molars and in some cases, lower first

bicuspids. Figure 2—for the reason that in many of these teeth the lingual cusp is so short and ill defined as to afford practically no resistance, making it necessary to utilize the buccal surface either entirely or in part.

Coessential with the careful cutting of the sides, is the dressing down of the occlusal surface. This part of the operation should be accomplished with small carborundum stones of cylinder and inverted cone shapes, and when completed should be merely a reduction in height of the cusps occlusal planes and sulci, from one millimeter in the sulci to one and one-half to two millimeters on the cusps, dependent upon the nature of the articulation, Figure 1. This allows us to retain the maximum amount of tooth structure over the horns of the pulp as well as adding from one-third to one-half of the frictional wall from the occlusal to the gingiva over the old method of dressing down the occlusal surface to a flat surface with a large wheel stone.

By following this technic, you reduce the thickness of the casting to the amount only needed in its construction to withstand the wear of occlusion and permit of reproduction of tooth form, and greatly minimize the danger to the pulp from thermal shock. The preparation of the sides of the tooth is accomplished with vulco-carbon disc and conical shaped carborundums, simply dressing away sufficient enamel and dentin, and in many cases only enamel, until the crown will draw from the line where you have previously determined the gingival marg'n shall be. This finishing line is then definitely outlined, preferably with the smallest cylindrical shaped carborundum.

In determining the position of the gingival margin, in all this work we are guided by Dr. Black's rules of cavity preparation when the gum tissue and tooth crown are in their normal relation, the margins in the interproximal spaces must be carried just beneath the free margin. On the buccal and lingual, the soundness of the enamel surface, your judgment will decide where it shall be placed, preferably keeping it away as far as possible. Under any condition, however, when you must carry the crown to the gingiva, you must go slightly beneath it. Where the gums have receded, apply the same treatment you would in any operative procedure, wherever possible, keeping all margins above the cemento-enamel junction.

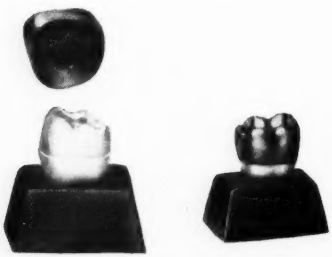


Figure 1.

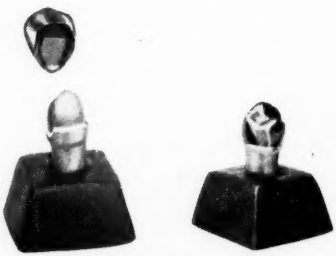


Figure 2.

Figure 3 represents what we term a three-quarter crown, for an upper molar the application of which is more universal to these teeth than any other attachment excepting possibly the MOD inlay. Instrumentation in the main differs but little from that for the full

crown with the exception that the buccal surface is not included, the crown terminating buccally with a typical MOD inlay margin. There are several rules which I will mention here that apply to all molar and bicuspid three-quarter preparations. First, that just as little tooth surface should be removed from the mesio—and disto-lingual angles necessary to allow the thinnest gingival margin possible at these points, for the reason that the longest distance mesio-distally should be from A to A and the shortest from B to B, being the occlusal openings of the grooves. Figure 4—these being the features which guard against lingual displacement and gives the necessary grip upon the tooth. Extension for prevention must be practiced to the extreme wherever an inlay or three-quarter crown is used as a bridge abutment, Figure 3. The mesio and disto-buccal angles must be extended far enough out to make the margins visible in their entirety for their full length after the dummies are assembled. The failure to do this will result in recurrent decay at these points. The two parallel grooves illustrated from A to A shall be placed just as far buccally as the case will permit and parallel to the long axis of the tooth. Figure 5. The farther you place them buccally the more tooth structure you will envelope with the crown. Grooves are never made across the occlusal, this surface merely taking the form of a step terminating in a slight acute angle with the buccal wall of the preparation. The lower molar is the only tooth in the mouth where the buccal is the third surface used in connection with mesial and distal to make a three-quarter preparation, on all others using the lingual. The reason for the difference being the natural inclination of this tooth lingually, making necessary the cutting of this surface, to receive this crown, but very little.

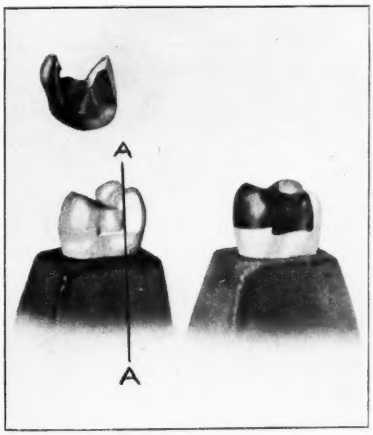


Figure 3.

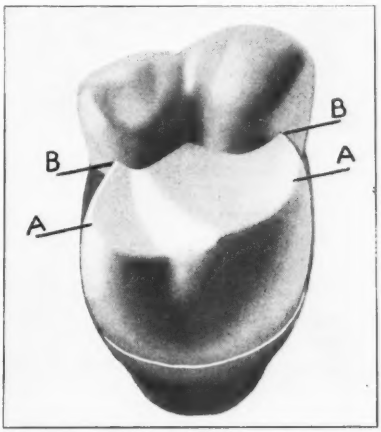


Figure 4.

Decay along the buccal surfaces at the gingiva, in patients who have reached the point in life where these restorations are necessary, is prevalent, and the opposite we find true on the lingual.

Figure 5 represents the type of partial crown applied to these teeth having comparatively long crowns in which lingual

cusps are weakened by decay calling for their protection. This preparation is carried far enough over them toward the gingiva on the lingual to permit of sufficient hold. This principle applies on any other tooth where a like condition exists.

Figure 6 represents cavity preparation

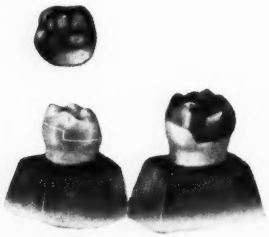


Figure 5.

and finished three-quarter crown for bicuspid applied to either the upper or lower, the method of construction of which is so near in detail that explained in molar construction, that anything further need not be said.

Three-quarter crowns find the greatest

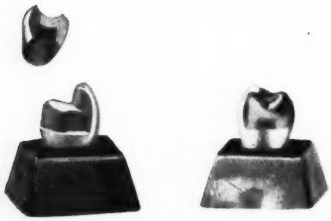


Figure 6.

use on the six anterior teeth. Figure 7 represents the cuspid, the details of which are the same as the central and will be covered by the technic given later for that tooth. Figure 8 is a central incisor showing the preparation and the finished crown, which I will go into with considerable detail. Figure 9 represents the two initial cuts which are accomplished with a vulco-carbon disc removing simply the contact points of the mesio and disto-lingual angles, reaching to the gingiva at these two points. Very necessary is the manner in which the stone is held. The current position is shown in Figure A, Cut 10, slightly convergent with the long axis

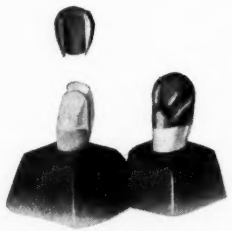


Figure 7.

A-A of the tooth toward the incisal. The incorrect method is illustrated by same cut, Figure B, and this is a very common fault, many times resulting disastrously, for the reason that if too much tooth structure is carelessly removed from the gingival point, the balance of the tooth

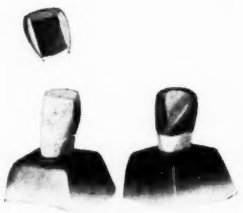


Figure 8.

above it must be cut away in order to allow the crown to draw. Not only does this weaken the preparation, but causes many hyper-sensitive teeth. To avoid injury to the contact points of the teeth contacting with the one under preparation, separation should be gained and a metal matrix placed over them previous to the use of the carbo disc.

Second step, Figure 11 illustrates the removal of a sufficient amount of the lingual plate of enamel to permit of the restoration and protection of the incisal angle. The incisal end is protected with

Figure 9.

a long bevel in exactly the same way and for the same reason that we protect a porcelain facing when used as a dummy. Figure 12 illustrates third step or the correct method of preparing the incisal step, which part of the prep-

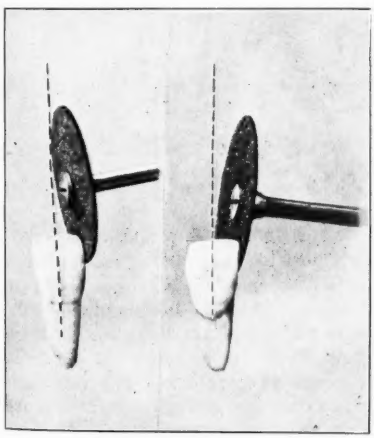


Figure 10.

aration is accomplished by the use of small cylinder carborundums, completed with a large inverted cone bur No. 40 or 41. The bur being shaped as it is, produces an acute angle at the junction of the incisal and with the labial plate adding greatly to the resistance against lingual displacement.

Figure 13 gives us a definite idea of the position a groove should occupy in an anterior three-quarter preparation,

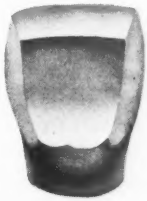


Figure 11.

the correct placing of which is of vital importance. This groove should always

Figure 12.

be started between the lingual and labial plates of enamel at the point made by

Figure 13.

the acute angle of the incisal step, running parallel with the incisal third of the labial plate of enamel and terminating in the extreme mesio and disto-labial angles, as illustrated in the cut

14 by Figures A-A. You will note that in the instruction for placing the groove in the bicuspids and molars, its position was parallel to the long axis of the tooth, but were we to use the long axis of an anterior tooth as a guide, we would be utilizing the shortest possible distance from gingiva to incisal that the crown of that tooth affords for the reason that, on account of the dip in the cemento-enamel junction incisally at this point, and when we take into consideration the reason that in the normal set of teeth, the centrals tip slightly forward at the incisal, the laterals and cuspids not quite so much and the bicuspids and molars practically straight.

Figure 15 is shown for the purpose of emphasizing that the grooves must be parallel or as near so as man can make them with the instruments at hand. They are made by using a tapered cross-cut inlay bur, starting with the smallest size and using larger ones as the case

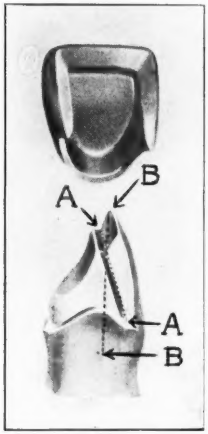


Figure 14.

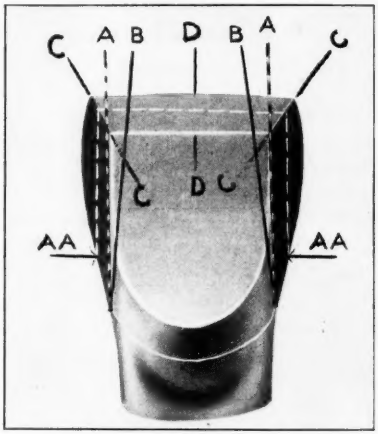


Figure 15.

that the strength of our preparation lies only in that part of the tooth crown engaged, extending from the bottom of one groove around the lingual surface to the bottom of the groove on the other side, we will see that we have taken in only the weakest part of the tooth and have lost the advantage gained by utilizing the distances between the long axis and the correct groove position.

Aside from this, the groove paralleling the incisal third of the labial plate and terminating in the extreme gingival labial angles, will carry those margins into practically immune territory, and will automatically parallel these abutments with the posterior abutments, for progresses until they are shaped properly. They must be wider at the incisal labio-lingually than at the gingival end to allow a slight leeway in placing the crown. The two parallel black lines on Figure 15 are to illustrate the necessity of correct preparation. The red lines illustrate the incorrect preparation which is very often seen, and that is the cutting of the grooves to the position which they outline. If these grooves were placed convergent to each other so that they would meet at any common point beyond the incisal, the closer that point is brought to the tooth, the more you will have to depend upon cement for retention. A properly constructed three-

quarter crown when started to place, should slide in frictional resistance from the time that the gingival ends enter the incisal openings until the crown is seated in position, cement being merely the material used to hermetically seal the joint.

The rigidity of any of these attachments depends first on the bulk of the material which we have from a point designated by AA, Figure 15, passing upward to the angle across incisal to opposite angle on to a point designated

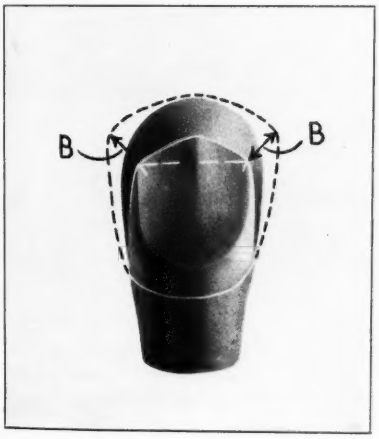


Figure 16.

as AA. The depth of the incisal step regulates this bulk and the distance measured from D to D should be equal to the distance included from C to C. The shape of the floor of the incisal should always be the same as the incisal end of the tooth upon which it is made.

In the central incisor it is practically a straight line, in the cuspid as per illustration on Figure 16, it will take more the shape of a V dependent upon the sharpness of the cusp. A common error in preparation is to place the floor of the step as outlined from A to A. You will notice that if the step is placed deep enough to give the breadth at the incisal angles, B-B, how dangerously near we would encroach upon the pulp.

Figure 17 illustrates the central incisor showing pin retention. We have a

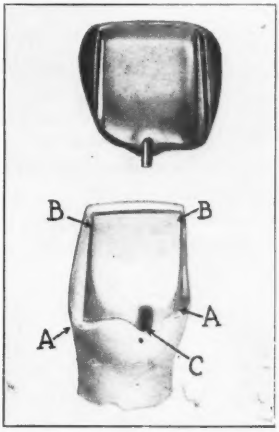


Figure 17.

certain number of incisors both centrals and laterals where the lingual surface is concave in entire length from the incisal to the gingival, giving no opportunity for any frictional wall around the cingulum. In these cases I use a

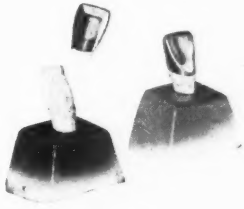


Figure 18.

threaded 21 gauge iridio-platinum wire sunk in the lingual pit. This preparation gives us practically three dowels, the two grooves in apposition to each other, and the pin for the third making a very strong attachment. In some cases the lower incisors, Figure 18, are called

upon to act as abutments, the only difference in this preparation from an upper being that the lingual third of the enamel plate is left intact, only that much being removed as is necessary to produce a shoulder and incisal bevel.

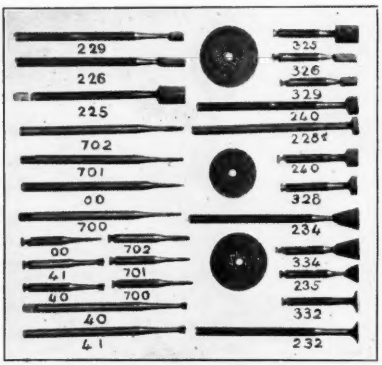


Figure 19.

This procedure is necessary for the reason that were we to remove the lingual plate entirely, we would so narrow up the approximal surfaces labio-lingually that we would have very little frictional wall remaining. Being on the lower jaw, the occlusion does not have to be taken into consideration on this surface, the disadvantage being that the finished crown is necessarily slightly thicker on the lingual than the tooth on which it is placed, but that is of small moment.

The instruments necessary for this work we find in every man's cabinet and the only ones I will illustrate will be the stones and burs which speak for themselves. Figure 19.

There has been a great deal said both for and against the direct and indirect methods of taking a wax impression. I believe the selection of a method and the success attained is largely a matter of personal equation. Personally I use the direct method to the practical exclusion of the other, believing that the original tooth preparation makes a finer model than one made from an impression of it.

I use the indirect method in full crowns because I have not been able to cast complete rings without shrinkage, and in cases where the decay has passed far beneath the gingiva, under these conditions I value the indirect method, mainly because of the fact, that by use of the technic of Dr. Costen, I can swage the casting over the amalgam die, overcoming the shrinkage that exists in the full crown, before placing in the mouth.

In practically all other castings, three-quarter crowns, inlays, etc., the shrinkage of gold when proper attention is given to the details of the casting technic, is of such small moment as to be negligible, the casting so made going to place with the exertion of very little applied force.

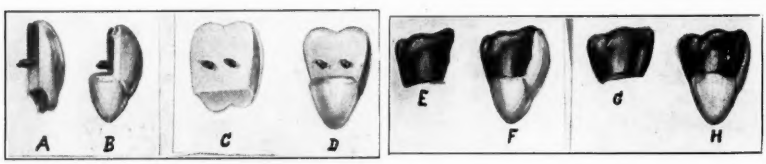


Figure 20.

We cannot construct dummies by the old method of setting our facings high on the labial side of the ridge, producing a shelf on the lingual surface with no regard for interproximal spaces, tooth form, contact points and embra-

sures, and proper occlusion, and be successful.

We will all admit that porcelain produces the best occlusal surface from a masticating standpoint, but we must also grant that procelain in contact with the gingival tissues, comes nearer to producing a condition of perfect health than any material outside of the natural tooth itself.

Consequently, any dummies which I shall show in the accompanying cuts, will have entire porcelain contact with the gum, and gold occlusal surfaces, as we believe that the lesser of the two evils caused by the gold, should better be borne by reduced masticating surfaces than by unhealthy gingival tissues.

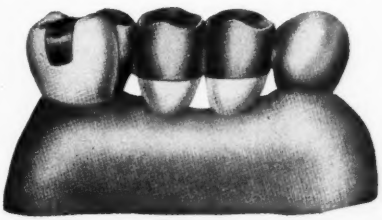


Figure 21.

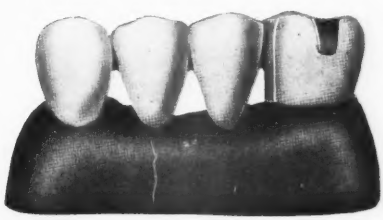


Figure 22.

I shall take up first, the replacement of teeth where extractions have been made previously, and the gum tissue is in a healed state. Figure 20 is largely self explanatory. Select facing "A" contour and length of the crown of the tooth which was extracted. In the average case this will be approximately two-thirds of the length of the space to be filled by the dummy. Bevel the gingival third of the labial surface in a line bringing the point of the porcelain tip "B" to approximately the top of the ridge or slightly labial to it. Grind facing "C" on both mesial and distal from about the point paralleling the pins, so that a slightly convex line drawn from that point of the apex will give us the proper interproximal space "D". Take porcelain with a fusing point of 2,300 degrees, build it to an excess on the facing, and bake to a high biscuit. Grind to fit the model, place back in the furnace and carry to an overbake, remembering that this porcelain tip is merely to produce a sanitary condition, and that it adds nothing whatsoever in the way of strength to that bridge. Consequently, porcelain baked to an impervious surface for this work, would be ruined were it baked to the same degree for an inlay or crown, and if at any time before completion and setting of bridge, this root surface becomes roughened by grinding, it must be reglazed, as it cannot be polished by any method high enough to prevent it absorbing the fluids of the mouth, and becoming just as much an irritant to gingival tissues as an etched enamel surface on a natural tooth. "E", "F", "G", "H" represent the gold occlusal attachment completing the dummy.

Figure 21 represents the proportion of our dummy from occlusal to gingiva which should be occupied by the gold and porcelain.

Figure 22 gives us approximately the proper shape of a dummy, its contour, point of resting upon the gum and interproximal spaces. Under normal conditions, the soldering joint should include

the occlusal third and interproximal space occupying the middle and gingival third. Every surface of these dummies is convex excepting the extreme occlusal point of inter-proximal space. They should be so constructed that with the aid of the toothbrush and silk tape, the patient is enabled to cleanse every surface. No full denture, removable bridge or fixed structure will be any more wholesome and sanitary than the wearer is pleased to keep it, and it is up to us as dentists to produce restorations which are possible of proper cleansing.

When a bridge is to be constructed involving any of the bicuspid or six anterior teeth, and extractions have not been made in selected cases my method of replacement is to insert porcelain roots one-fourth the length of the root of the natural tooth, having the bridge entirely constructed before such roots are extracted. Place the bridge in position at the same sitting that the teeth are removed, being sure that the socket is thoroly curetted at the time of extraction.

One essential feature of this work is that the porcelain root must take the shape and entirely close the orifice of the root socket, tapering from beyond this point to the root tip. These root tips are advisable, and are attended with excellent results, when extensive necrosis is not present. Very little absorption takes place. The gum tissue hugs the porcelain root very close and remains in an exceedingly healthy state, in fact many cases of over three years' service can hardly be told from the abutment next to it, mainly because of the way in which they retain facial contour.

I will mention a few details of construction. Prepare abutting teeth and make your abutments. Fit them in the mouth and take a full impression in modeling compound, by the core method. Remove abutments and place them in position in the impression and run. Mount full case on an anatomical articulator. Study the radiograph of roots to be replaced. Approximately outline on the labial surface on the model with a lead pencil, the direction and length of such roots. With a sharp lance cut away the crowns, definitely outlining the gingival margin and excavate sockets on the model to approximately one-fourth the length of the root. Proceed to grind facing in position. Bake on porcelain root and carry to high biscuit, grind to fit socket and glaze.

Figure 23.

The remaining part of the construction does not differ from any other bridge excepting this, that on the lingual surface of these dummies, they should conform to the anatomy of the teeth

Figure 24.

they are to replace. When the roots are extracted, the bridge should be tried in position first without the porcelain roots to be certain no warpage has taken place during its assembling. Remove and place facings in their respective positions without cement, and replace in the mouth. Should the root bind at any point it should be dressed with a stone, after which reglaze and cement to the bridge. Set the bridge with eugenol and oxide of zinc temporarily, it being my practice to never cement one until from one to three weeks have elapsed after extraction, for the reason that we may encounter secondary infection, and were our bridge cemented, a great deal of trouble would ensue.

When you have determined that the tissues are in a healthful state, remove bridge and thoroly sterilize both the sockets with iodine and the bridge with a 50 per cent alcohol solution, and cement, being careful that nothing comes in contact with the porcelain roots which might possibly carry infection into the sockets.

Figures 23, 24 and 25 are made from X-rays to illustrate foregoing remarks.

Where we have one tooth to replace and the teeth on either side not affected with pyorrhea, it is a good practice to use simple inlays or some other form of inlay attachment, as in cut, Figure 26A, soldering the dummy to the distal one only, and making a socket on the distal contact point of the anterior inlay. The diameter of this socket is slightly larger at the orifice than at the bottom, rendering a slight movement of each abutment possible without bringing any stress on either one; in other words, breaking the stress between the abutments, a feature you all must realize as being invaluable up to a certain point in any case where two or more teeth are tied together. The construction of this work is very simple and the only feature necessary to enlarge upon is taking our impression and making the model. The impression must be

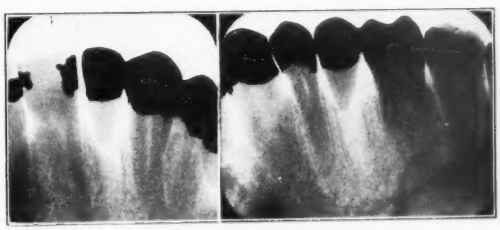


Figure 25.

taken with modelling compound, the reason for which will be seen later. Seat your impression in the mouth and while the modelling compound is in a moulding state, remove about one-third the distance away from the teeth, repeating

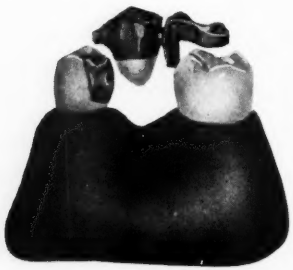


Figure 26A

this at least twice, in order that all undercuts may be broken. Now hold the impression firmly in position until entirely hard. Remove abutments and place in their positions in the impression. The inlay which carries the

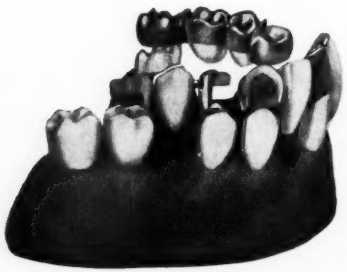


Figure 26B.

socket must have a very thin film of wax melted over its cavo-surface. Mix a quantity of technic cement and pour the impression of the tooth carrying this inlay, including one or two anteriorly to it. Place a tack before it hardens. The rest of the impression pour with any good soldering investment compound. When the model is separated apply a hot spatula to the inlay in the cement tooth which will melt the wax and allow you to remove the inlay from the cavity. This must be done for the reason that

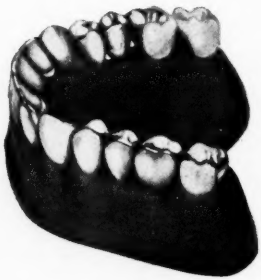


Figure 27.

when the dummy is carved in wax including the lug which rests in the socket, in order to remove for investment and casting, the mesial inlay will have to come also, and then be separated from the wax dummy.

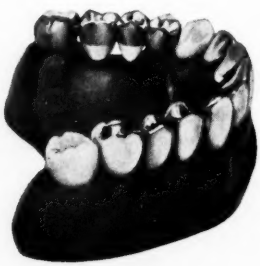


Figure 28.

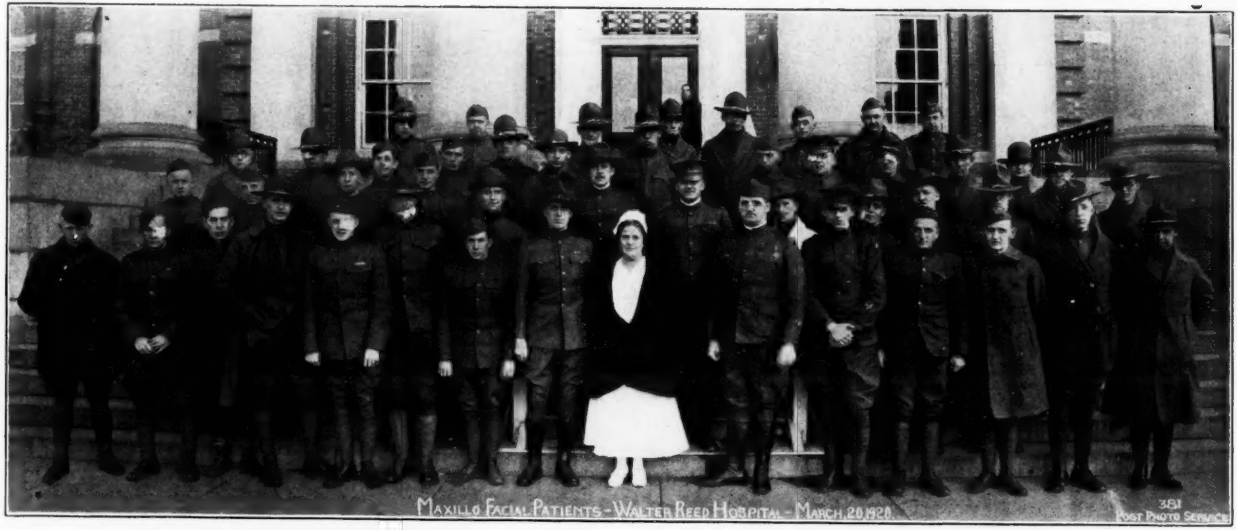
After this is cast, it is fitted to this inlay, replaced on the model, waxed to distal inlay and soldered. This idea can be used in many diversified ways in small bridge restorations. It has its advantage over the old type of the rest lug bridge from the fact that there is

no lost motion giving undue stress on the abutment which carries the dummy. It can be controlled for each individual case by the taper given the lug. The more taper the more motion, the reverse being true.

Figure 29.

Figure 30.

Figures 27, 28, 29, 30, and 26B represent different views of a completed upper case, illustrating especially the lingual contour of the dummies and proportions of gold and porcelain used in their construction, occlusal reproductions of tooth form proper embrasures and interproximal spaces, extension of the labial and buccal margins for prevention of subsequent decay, the paralleling of abutments and porcelain root implantation.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POST PHOTO SERVICE

FREE SKIN GRAFTING IN THE MOUTH.

By Joseph D. Eby, Major, Dental Corps, United States Army.
Walter Reed U. S. Army General Hospital, Washington, D. C.

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WHEN a missile penetrates the maxillo-facial area and traverses the oral cavity, the mucous membrane lining of the lips and cheeks is lacerated, and the teeth intercepted are torn out with an extensive loss of alveolus and adjacent structures.

This condition leaves the areas of raw surfaces in contact in such a manner that the early treatment of the wound makes it very difficult to separate the surfaces and prevent adhesions owing to the fact that any material placed between the raw surfaces will usually seriously interfere with the treatment of other complications.

The result of healing causes the obliteration of that space between the buccal or labial gum ridges and the mucosa of the cheeks or lips which are commonly called the buccal or labial sulci.

These adhesions do not interfere usually with such work as the adjustment of splinting apparatus for the reduction of fractures, and in cases of loss of substance in the bone beneath, the additional protection afforded prevents the liability of entrance into the mouth during the bone grafting operation which lends a valuable point to the sometimes presence of these adhesions, so that they are not brought before the operator's attention as a serious defect to be corrected until the wound has thoroughly healed and seasoned and all other necessary repair has been completed up to the stage of inserting some form of prosthesis for the restoration of the loss of sub-structure to support the overlying tissues and for the restoration of lost teeth. There are probably a few exceptions to the above statement, one being that condition wherein these adhesions must be liberated primarily in order to gain free manipulation in the overlying tissues for plastic operations in the lips and cheeks. When the lips or cheeks are freed from the tissues beneath, the surfaces heal by granulation, and if any materials such as modeling composition, wax, paraffin, vaselined gauze, medicated gauze, vulcanite or metal are inserted between the raw surfaces, very painful sloughing and infection occurs which makes for an imperfect operation.

Much has been written in Plastic Surgery on the subject of free skin graftings, accredited usually to the early works of Drs. Thiersch and Ollier, but it was not until the demands were made as the result of Maxillo-Facial injuries in the European war that the possibilities of the success of free skin grafting in the mouth were made practical. One of the most valuable contributions to Oral Surgery evolved from the treatment of Maxillo-Facial injuries is the use of epithelium as an inlay to prevent the recurrence, shrinkage and to restore the full depth of the buccal and

labial sulci which would otherwise be very stubborn conditions to overcome. This operation is commonly referred to as epithelial or skin inlays.

The advantages gained by this operation are:

1. Liberation of tissues to make plastic operations possible.
2. Restoration of function to the muscles of expression.
3. To improve facial appearance.
4. To replace prosthetically lost substructures.
5. For the insertion of dentures.
6. To close perforations in the palate.
7. To liberate adhesions of the tongue.
8. To lengthen the lips.
9. To relieve Trismus.

There are no writings in Pre-War literature on this subject and such as have appeared to date in current periodicals are more or less in the abstract and do not deal definitely with the elements causing failure or methods which assure success.

This operation is applicable in all intra-oral adhesions whether they result from ulcerative lesions or from industrial, accidental or missile injuries.

The principles of success in this operation are:

1. Preoperative preparation.
2. Quick and accurate technic of operation.
3. Postoperative care and treatment.

PREOPERATIVE PREPARATION.

There should be no infectious processes in or near the site of operation. In order to insure against all liabilities, the healed tissues should season for several months in order to eliminate all pathological changes and to produce highly vital tissues. The grafted skin must be held securely in close contact against the raw surfaces covered, in order to cause a rapid agglutination and to prevent ingress of the fluids and micro-organisms in the mouth.

Some operators employ the method of adapting softened dental modeling compound into the crevas over the raw surfaces made by the incision, and after the skin graft is placed over this mould, it is secured to position by means of stay-sutures sewn across the exposed surface from one edge to the other. This plan is usually unsuccessful, and just here it may be well to explain the reasons. Mucous membrane granulates very rapidly and owing to the fact that nature's tendency in healing is to fill a deep cavity, this operation must be recognized as one opposed by, and attempting to overcome the natural laws of healing. When the mould or plumper is merely sutured in position the pressure of the overlying structures can easily press it slightly out of position, and when this occurs the graft is likewise pressed downward, causing either a loss of depth in the sulcus or failure to unite. Another reason why this method is contraindicated is the fact that it must be removed to make an impression for the permanent prosthesis, and it will be found very painful and tedious, to resuture the mould back in position to serve as a retainer until the denture is completed, but unless this is done, continued granulation will press downward such that when the denture is inserted it will depress the lips or distort the cheeks. For these reasons, this method should never be used. If the entire upper arch is edentulous the cranium should be employed by means of a head cap, or otherwise to effect the Kingsley principle of anchorage for the support of an intra-oral insert which can be tightened after the modeling composi-

tion is adapted, and can also be removed, cleansed, replaced or tightened until the permanent denture is made to replace it.

If the lower arch is edentulous a chin cap attachment may be used similarly. When there are teeth remaining in the arches, mechanical devices attached to them are indicated. The basic indications for such an apparatus are security, ability to adjust and remove with provisions made for the secure attachment of modeling compound which may be softened and pressed into the deepest recesses after the adhesions are incised. To meet these demands the most ideal apparatus is Dr. V. H. Jackson's spring-clasp attachment of removable orthodontia apparatus. This appliance possesses such latitude and design, the spring clasps can be made very secure and loops of heavy wire can be formed imaginatively in the region to be epithelialised, so that the modeling compound may be inserted with a maximum of speed and accuracy, thus facilitating the operation at a very important stage. Another satisfactory method is to construct the partial denture with secure spring-clasp attachments then by perforating the border beneath the area to be operated, modeling compound can be added during the operation and later duplicated in vulcanite.

Quick Accurate Technic of Operation.

If this operation is conducted in a clumsy or indifferent manner, failure is imminent. In preparation, the appliances to be used should be sterilized, or if of rubber, immersed in alcohol. The modeling compound of usual manufacture cannot be immersed in cresol or alcohol, but can be readily treated in 1/1000 bi-chloride of mercury. The two best materials for this use are Kerr's Perfection Compound or the White Composition, manufactured by the Dental Mfg. Co., of London, Ltd. American agents, 220 West 42nd St., New York, N. Y. The latter material manipulates well when softened and its color value affords a much more accurate contrast in the mouth. The instruments necessary are a sharp curved scalpel and a very sharp razor or skin-graft cutting instruments. Other materials required are sterile gauze 2x2 squares, or medium gauze sponges, sterile vaseline, hot water, boric acid solution, vaselined gauze dressings and 3½% iodine. For a slight operation, local or conductive anesthesia is indicated. In very extensive conditions wherein a very great area of the face is undermined necessitating an equally large surface of skin graft, and where some delicate regional anatomy is involved, an intrapharyngeal general anesthetic is best. Whether this operation be performed in the dental chair or on an operating table, an uncompromising sterile technic must be followed. The patient's head should be covered with sterile cloth, the exposed surface around the mouth iodinized, and the mouth previously cleansed and rinsed with strong antiseptic, and preparations made to iodinize immediately before cutting into the tissues. In selecting the surface from whence to prepare the epithelium, the first indication is for a hairless surface situated where a scar will be less unsightly. For men, most satisfactory material can be obtained from the outer surface of the upper arm or from the thigh. With sterile coverings the skin should be bathed, washed in iodine and alcohol. It is to be preferred that the skin graft should be in one section in which there should be no perforations. The specimen of epithelium must be thin, and should be elevated thru the epidermis,

a typical Thiersch graft. If the surface is covered with a thin film of stiff vaseline it is much easier to cut and control the portion removed.

With every possible preparation ready, the following steps should be executed with all speed, and the work of an assistant operator can reduce the time of operation at least 50%.

Insert retractor in mouth, if possible, with scalpel incise deeply liberating the sulcus to a greater depth than normal, immediately thrust a hot boric sponge into the crevas, previously having the head posed so as to prevent the entrance of saliva. Soften the modeling compound previously arranged on a supporting apparatus preferably with dry heat in order to only soften the surface, press this quickly to position and with external pressure, mould it into the deepest recess of the incision (removing the hot gauze). Remove the apparatus with modeling compound thus fitted, and instantly replace a hot boric sponge. In the meantime the assistant operator should have procured the epithelium as follows: Grasp the arm very tightly in the left hand so as to make tension over the surface from which the epithelium is to be elevated or if a larger piece is required an assistant can flatten out the surface and make tension with two broad instruments. Lay the razor flat on the tight skin and make a backward and forward motion, loosening the epidermis of desired thickness and size. The vaseline on the outer surface of this epithelium again proves valuable by causing the specimen to adhere to the modeling compound, quickly withdrawing the gauze pack, the apparatus containing the epithelium can be thrust securely to position with the raw surface of the graft in contact with the raw surface of the incision. The graft should overlap all raw surfaces with some excess.

If saliva is pressed in between the two raw surfaces, the epithelium will fail to unite, it being expedient that the raw surfaces must be in intimate contact with no intermediate substance. The surface from whence the epithelium was procured should be dressed with gauze, saturated with vaseline, redressed daily until healed.

Postoperative Care and Treatment.

Apparatus holding the mould into position which supports the graft should not be removed until at least the fifth day, the mouth should be sprayed daily and receive the best prophylactic care. Upon the removal of the apparatus it will be found that the epithelium is adherent to all raw surfaces and the excess can be removed along the borders. The surface should be sprayed, iodinized and the apparatus *immediately replaced*. The fact that this apparatus is replaceable becomes the cardinal factor at this stage for it serves as a positive retainer.

Impressions can be taken at any time for the construction of the permanent denture which must be of design which will fit into the depth of the sulcus, for it is only after several months of seasoning that obliterative granulation will be arrested, and the operation be made a permanent success.

This epithelium after having become re-vitalized at first retains its characteristic color and appearance, but after several months it gradually simulates the appearance of mucous membrane owing to the warm moist environment which it occupies.

Steps of Operation.

Figure 1.

Illustrating the path of a machine gun bullet which passed thru the lower lip, causing extensive loss of teeth, alveolus and lip, which upon healing obliterated the labial sulcus.

Figure 2.

Incision to release lip from sub-structures.

Figure 3.

Shaving Thiersch graft from the arm.

Figure 4.

Illustrating control of saliva, the Jackson appliance with modeling compound, plumper moulded into the depth of the newly established sulcus with the raw surface of the Thiersch graft covering the composition and ready for insertion.

Figure 5.

Apparatus in position with the graft held tightly against all raw surfaces.

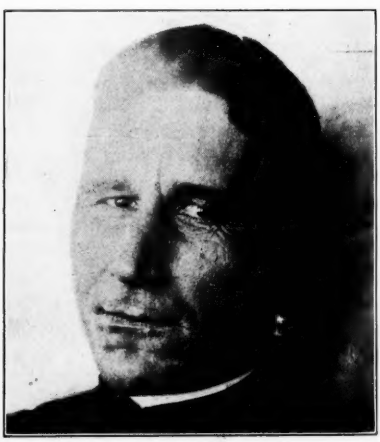
Figure 7.

Close-up view of graft.

Figure 6.

Partial view of graft after the removal of the apparatus five days after operation.

Figure 8.



Completed case showing elevation of lip properly supported by a correct fitting denture beneath.

Epithelialization of Intra-Oral Adhesions, Edentulous, Superior Maxillae.

Figure 9. Figure 12.

Figure 9. Entrance of high explosive fragment, left Malar ominence, exit thru right cheek destroying the facial, nasal and palatal processes of the superior maxillae. The overlying soft tissues collapsed by the contraction of thru and thru scar bands. All of these adhesions necessarily had to be loosened before the superficial plastic operation could be performed.

Figure 12. Result of operation.

Figures 10 and 11.

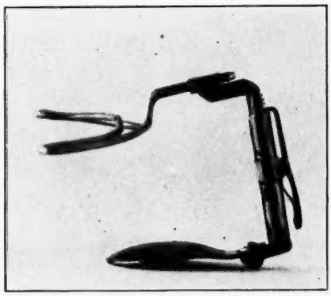
Cranial anchorage for intra-oral stage for the support of modeling composition. This apparatus consists of a metal plate swedged to fit the forehead with loops of (12 G.) wire soldered to the edges for reinforcement, and for the attachment of a plaster bandage cap. To this plate was soldered four pieces of square tubing with set screws adjusted to secure the extensions in such a manner that they could be inserted, removed or tightened. Inasmuch as the entire middle-third of the face was to be undermined, it was considered necessary to provide special nasal supports. The intra-oral portion is similar to an edentulous upper impression tray with the exposed surface roughened to secure the compound. Operation general anesthetic, the line of the buccal and labial sulcus was first established by incision. The superior maxillary region was undermined, modeling compound was forced into position on the stage and epithelialized. The contracted scar right cheek was excised, edges sutured.

Epithelialization, Intra-Oral Adhesions, Edentulous Mandible.

Figure 13.

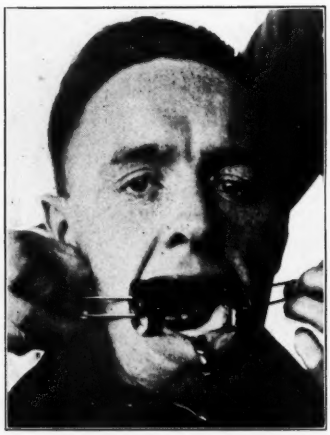
Completely adherent lower lip and cheeks.

Figure 14.



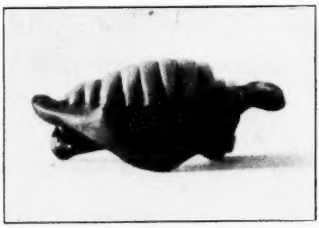
Pressure apparatus consisting of chin pad attached adjustable to an intra-oral loop of (12G.) wire with ratchet for insertion removable or tightening.

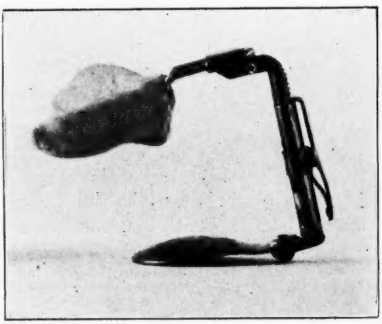
Figure 15.



Operation performed local anesthetic, apparatus in position.

Figure 16.





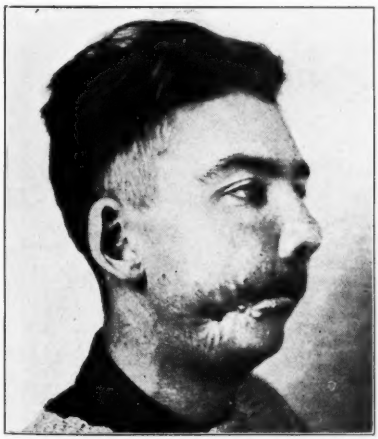
Apparatus with modeling compound mould which was worn until the denture illustrated was ready for insertion.

Figure 17.

Denture in position.

Epithelialization Prior to Plastic Operations.

Figure 18.

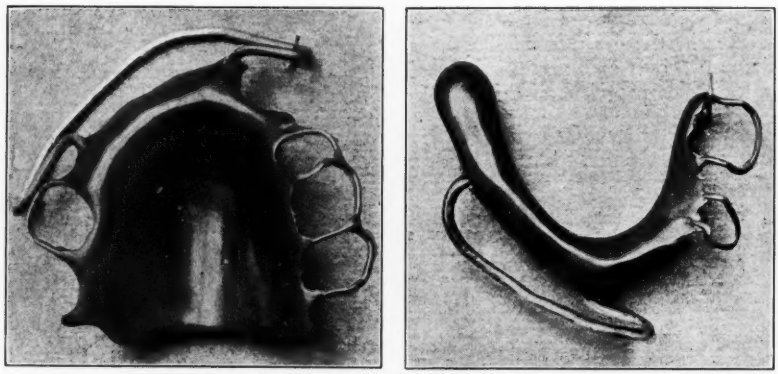


Path of high explosive fragment rendering both upper and lower lips adherent to sub-structures region right corner of mouth.

Figure 19.

Lips liberated and prepared for plastic operation.

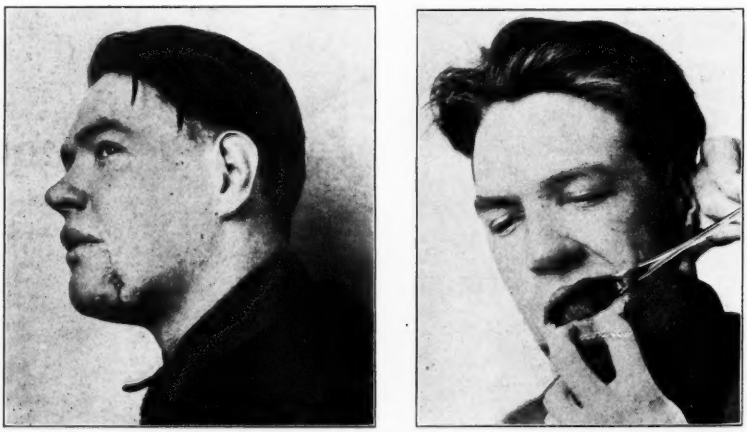
Figure 20.



Modified Jackson apparatus to hold modeling compound moulds.

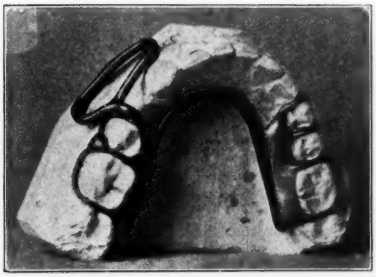
Jackson Apparatus for the Support of Skin Inlay.

Figures 21 and 22.



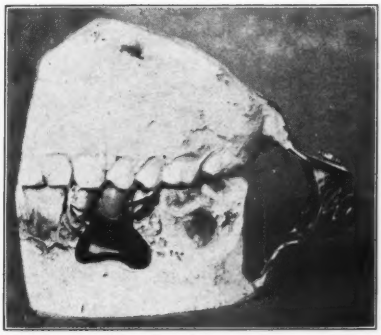
Sulcus entirely obliterated for space of three Cm. left lower corner of mouth immobilizing the muscles of expression effecting a pseudo-paralysis.

Figure 23.



Jackson apparatus prepared to hold modeling compound plumper.

Figure 24.



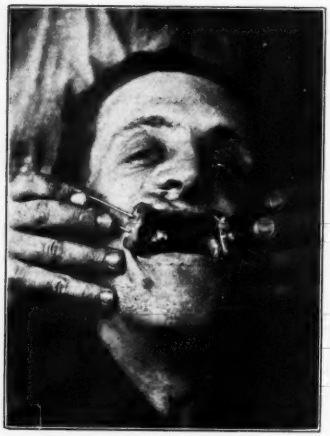
Denture prepared to retain the results accomplished.

Figure 25.

Illustrating the expression restored.

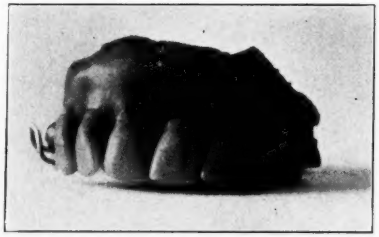
Modeling Compound Extensions on Dentures.

Figures 26 and 27.



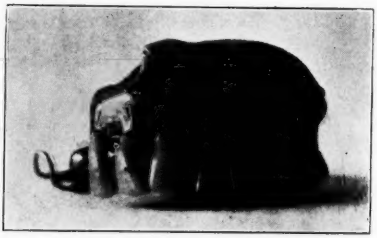
Path of missile, the extensive loss of alveolus upper labial sulcus obliterated, lip adherent.

Figure 28.



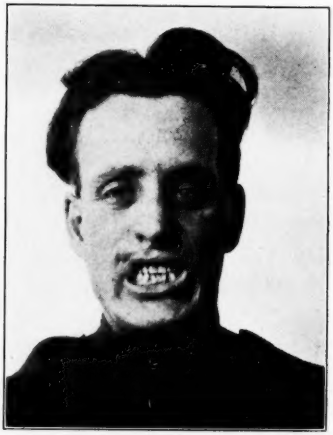
Denture constructed with perforations made to secure modeling compound.

Figure 29.



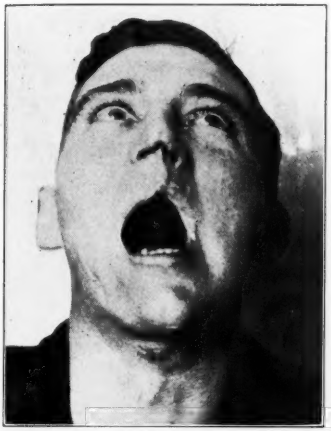
Modeling composition in position after operation which was later duplicated in vulcanite.

Figure 30.



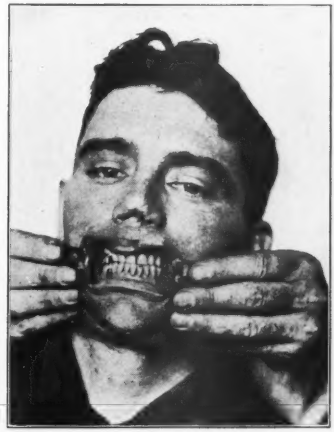
Denture in position, lips voluntarily retracted, the upper lip was lengthened sufficiently to close into normal lip-line contact with the lower.

Figure 31.



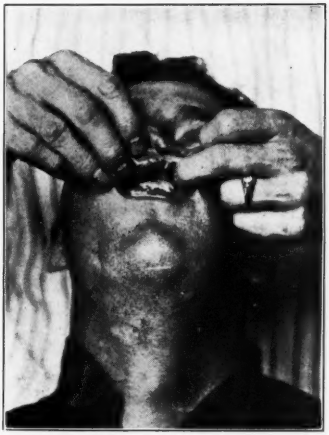
Completely adherent upper lip point of exit of missile.

Figure 33.



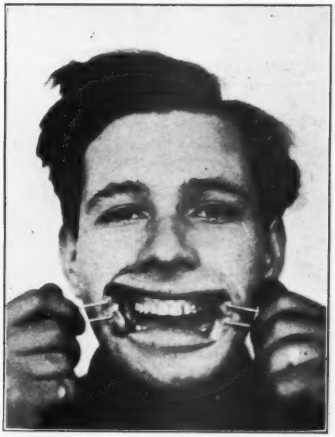
Denture in position.

Figure 32.



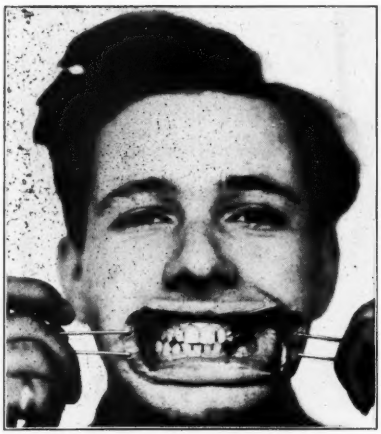
Lip liberated with the skin inlay plainly visible.

Figure 34.



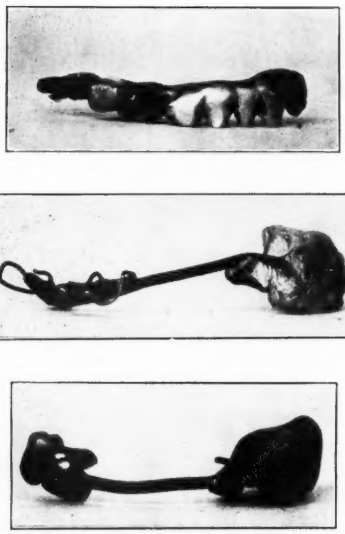
Left lower buccal sulcus obliterated.

Figure 35.



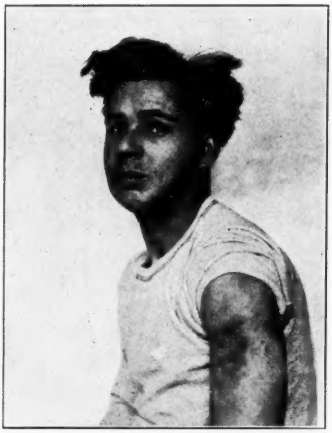
Upper portion of skin inlay visible.

Figure 36.



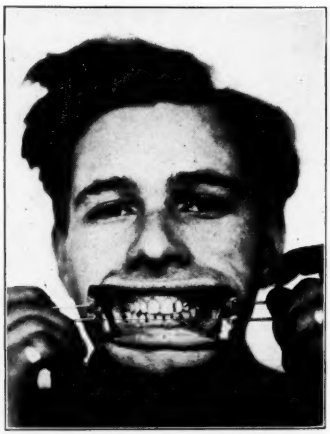
Inferior dental splint used for fracture of mandible, Jackson skin inlay apparatus and denture.

Figure 37.



Arm, healed surface from whence Thiersch graft was taken.

Figure 38.



Denture in position.

SELECTION OF ARTIFICIAL TEETH FOR PROSTHETIC RESTORATIONS.

By P. C. Lowery, D. D. S., Detroit, Mich.

(Read before the National Society of Denture Prosthetists, and the National Dental Association, Prosthetic Section, at New Orleans, La.)

THIS paper deals with a subject which the essayist considers second to no other phase of restorative dentistry. It deals with a subject that is of the utmost importance to general practitioners, prosthodontists, crown and bridge workers, porcelain workers, and contains food for thought for the orthodontist. He is enthusiastic over this subject and trusts that he will be able to imbue a goodly number of this audience with his enthusiasm for the reason that prosthetic art is the most neglected phase of restorative dentistry today.

Two Theories.

Since the advent of porcelain teeth in dentistry, in 1838, there have been two theories advanced for the selection of teeth to be used in prosthetic restorations; a very recent theory—the TYPAL—and an older theory, known as the TEMPERAMENTAL.

History of the Temperamental Theory.

The TEMPERAMENTAL theory of tooth selection was first adopted and described by Dr. Spurzheim. It was his contention that Socrates' theory of temperamental harmony between all parts of the body should apply to the teeth as well. This theory assumes that there is in each human body a governing principle, which insures harmony of form and size among its several parts. The theory, which has commonly served as a basis for the selection of teeth, prior to the evolution of the TYPAL theory, assumes that people can be divided or classified into four groups according to color of the hair, skin and eyes, and the physical characteristics of size and form. It also assumes that people of each group exhibit a characteristic form of tooth, so that we have a lymphatic, sanguine, bilious and nervous type.

Fallacy of Theory.

It seems that no one knew what was meant by Dr. Spurzheim's theory, or what he considered typical forms for a given temperament, because no two manufacturers of porcelain teeth could agree on the same mould of tooth for the same temperament or blended temperament.

Plea For Harmony.

It was not until Dr. F. H. Berry, of Milwaukee, Wis., came forward with his plea for better harmony between face form and tooth form, in a paper and demonstration given at the annual session of the Institute of Dental Pedagogics, at Buffalo, N. Y., in 1903, that we, as dentists, realized how inharmonious in regard to outline form artificial teeth were. Little actual work was done at that time to correct this lack of harmony, but to Dr. Berry credit should be given for calling attention of the profession to the existing evil.

History of Typal Theory.

Madame Schimmelpenick, an English authoress, issued a work in 1815 on

the "Science of Beauty," in which she classified face forms. She reduced the fundamental forms of faces to the square, triangle and circle, with modifications. Strange as it may seem, no one made use of this valuable work or suggestion as related to the profession of dentistry until Dr. J. Leon Williams, formerly of London, England, started his campaign in the dental journals in 1907, for better tooth forms. He had been investigating along this line and thru his extensive anthropological studies discovered the fact that all tooth forms and face forms could be grouped under three heads or types, known by the geometrical figures they resembled, as suggested by Madame Schimmelpenick in 1815, with the exception that Dr. Williams terms the "circle," as "OVOID."

Basic Laws of Harmony.

Then came the big problem of making a practical application of this discovery to prosthetics. Before considering this phase, there should be firmly fixed in mind the basic laws of harmony. They are briefly as follows: Lines that are parallel or nearly so, are harmonious. Lines that converge or diverge must have other lines, shorter or fewer in number, set in opposite direction to the primary lines, to produce harmony. Curved lines running in a similar direction are harmonious, but branching or diverging curved lines also require other curved lines running in opposite directions to complete their harmony.

Typal System.

From these scientific facts has been evolved the Typal or "TRUBYTE" system. The so-called "Trubyte" system, is a system or method of selection of porcelain crowns, facings, or teeth for prosthetic dentures, wherein the general outline form of the face, when seen full front view, is taken as the outline form of the inverted upper central incisor; the additional teeth desired, harmonizing with this incisor.

Development.

With this as a foundation and with the research facilities offered by the Dentists' Supply Company, of New York City, Dr. Williams, Prof. Gysi and Dr. Clapp designed a very complete series of moulds, according to the three typal forms and embracing fourteen variations of these three types. All these different moulds are concisely designated, so that the ordering from a supply house of your chosen selection is a very simple matter indeed.

The essayist, at this point, wishes to state emphatically that this paper is in no way an advertisement of the productions of any supply company and in support of that statement wishes to be clearly understood that any make of artificial tooth can be used and still the principle of the system be employed, by modifying less perfect moulds by the judicious use of a stone. However, it is his opinion that it is the duty of the dental profession to repay the Dentists' Supply Company for the magnificent service which they have rendered in the perfection of the Typal system and "Trubyte" teeth, by the expenditure of a vast amount of time and energy, when other companies refused to listen to the theory which Dr. Williams and his co-workers were expounding. Other manufacturers will undoubtedly attempt to effect a similar method and some are doing it now. Their mould numbers will, however, differ and there will probably be a chart developed in the near future by which at a glance we can ascertain the mould of one make that will be the same or very similar to the mould of another make, just as we now have in the matter of different shade guides.

Profiles.

There are three essential things to be taken into consideration in studying faces: First, the profile. The circle illustrates the three general known profiles—the convex, the straight and the concave. There are various blendings

of these primary profiles, such as straight upper, convex lower and convex upper—straight lower, which are quite frequently met with in practice. The pure concave is rare but is occasionally seen modified by the straight, designated straight-concave or concave-straight.

The operator should be able to recognize the type of profile to which the patient, with whom he is dealing belongs. Strive to keep it within its normal by not having too open or too close a relation of the inferior to the superior maxilla or by an excess of wax

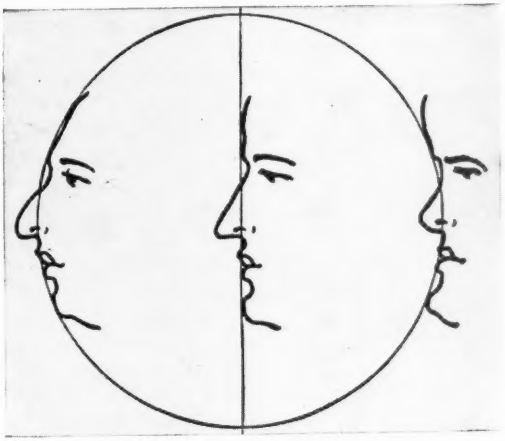


Figure 1.

"A" Figure 2. "B"

on the bite plates. However, by the aid of surgical interference it is a simple matter to restore a convex upper-straight lower to a pure straight profile and thus render humanity a great service.

Second, the general outline form of the face, shown by the dark line in Figure 2 "A," must conform to the outline form of the inverted upper central incisor, if they are in harmony, more especially to the distal approximal surface, because the greatest variation occurs in the distal and incisal portion.

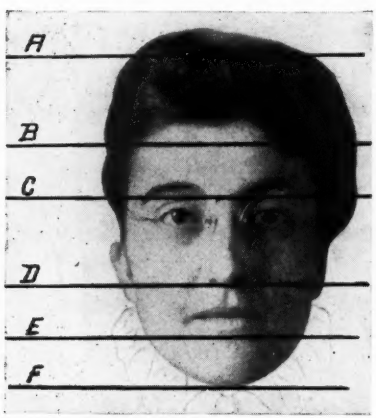


Figure 3.

Therefore we must remember that the slightest amount of grinding of these surfaces will make the greatest amount of change in the tooth.

Third, the proportions. The width is taken at the region of the zygoma and the length from the symphysis menti to the brow line, which is an imaginary line drawn across the forehead two-thirds the distance from the root of the nose to the normal hair line, as shown by the line B in Figure 3. This same relative proportion should be present in the upper central incisor. Exclusive of the collar, Figure 2 "A" and 2 "B."

Figure 3 illustrates the proportion of a well-balanced face according to artistic standards. The distance from the root of the nose (C) to the junction of the upper lip with the septum of the nose (D) should be equal to the distance from this point to the chin (F). The distance from D to E should be equal also to the distance from E to F. The length of the head from A to F should be approximately one-eighth of the whole length of the body in adults and one-fifth in a child.

Proportions.

You will note that these proportions are approximately what they should be in a well-balanced face and it is my opinion that the combination of this fact and the typical square type of arrangement of teeth which will be given later has as much to do with the pleasing appearance as the fact that the teeth are typical 2 E teeth in a medium square face.

If this lady were to present herself for full dentures some years hence with altered facial expression it would be the operator's duty to restore the relative proportions existing between C-D and D-F so that the function of mastication would take place under normal conditions and thus aid in restoring the lost facial expression. One of the greatest factors causing loss of facial expression is the closing of the relation of the inferior to the superior maxilla. The distance between D and F—the distance from C to D always remains constant. This may be caused by early extraction, especially of lower first molars, or by abrasion. The function of mastication being performed under a closer bite than normal, the tissues are not kept taut, hence a sagging of same with loss of facial expression.

Proper Time for Selection of Mould Desired.

The correct time to determine the proper mould of tooth desired for use in a proposed prosthetic denture is at the

time that the mandible has been brought to its position of rest. The bite-plates must be in position so that we have the desired, facial expression and the profile of the case in hand. Face should be seen full front view. Have glabella nasion vertically over symphysis menti. Have level of your eye fall in a plane with the posterior border of the zygoma, which is the broadest portion of the greatest number of faces.

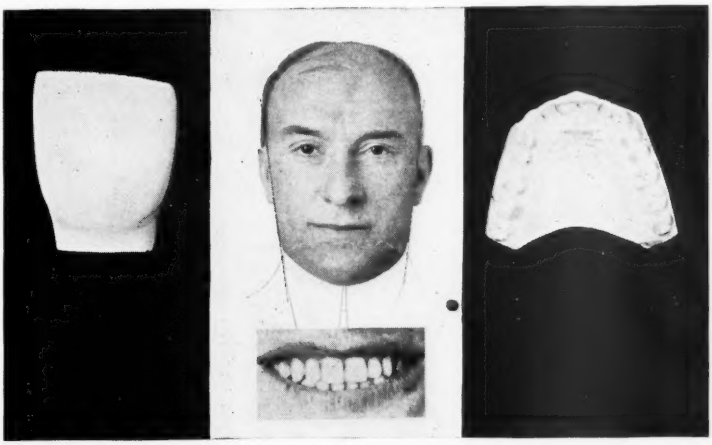


Figure 4.

Study of Faces.

We come now to the description of the three typal forms. We do not see these pure types very often and a description at this tiime may seem elementary but if we expect to successfully blend these three types, we must have them firmlv fixed in mind.

Severe Square Face.

Figure 4 illustrates the severe square type of face. It is rectangular in appearance, cheek lines nearly straight and nearly parallel. Wide forehead, because the head in the temporal region converges slowly forward. Nearly straight strong jaw line. Angles of jaw and chin well defined. Wide or medium wide chin. Teeth suitable for this type of face are characterized by nearly straight and nearly parallel approximal sides for one-third to one-half the distance from the incisal to the cervix, with relativcly wide necks. Palate, usually broad and shallow. The six anterior teeth in the upper arch are arranged in the segment of a large circle, approaching more nearly a straight line than either of the other types. The inclination of the labial surfaces are nearly vertical and the inter-dental spaces are short and narrow.

Severe Tapering Face.

Everything about the face in Figure 5 suggests the triangle. This is a pure tapering type. Cheek lines are straight or concave and converge rapidly downward. Medium wide forehead, because the head in the temporal region converges rapidly forward. Teeth for this type should have medium wide necks and rather flat labial surfaces. The distal surface has a slight double curve near the incisal. The palate is high and

inverted V-shaped. The upper anterior teeth are arranged V-shaped, with incisal edges well forward of the cervix. The inter-dental spaces are broad V-shaped.

SEVERE OVOID FACE.

Figure 6. This severe ovoid type of face suggests a circle. Decidedly convex cheek lines, diverging downward from the zygoma. Medium wide forehead, rounding evenly into sides of head.

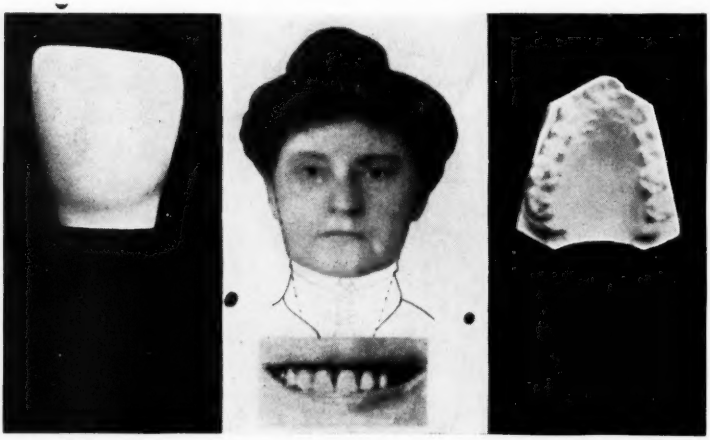


Figure 5.

Jaw line rounding, presenting a characteristic double curve with a narrow chin. The ovoid tooth has a double curve high up on the distal surface of the upper centrals and on the mesial surface of the upper laterals. Mesial surfaces of upper central incisors are decidedly convex; the labial surfaces are rounding. In this type the palate is medium high and rounding. The upper anterior teeth are arranged in the segment of a smaller circle than that of the square type. Central incisors are slightly prominent and the laterals depressed at the cervix, leaving the mesial portion of the cuspid prominent. Spaces between anterior teeth are not uncommon, especially when the face is unusually broad in the region of the zygoma. The inter-dental spaces are about medium.

The more characteristics we can hinge about these typal forms the more alert we will be to effect successful modifications of them.

BLENDING.

Just as the blending of primary colors gives us secondary colors, with various hues, so also the blending of the primary types of faces gives us secondary modifications and various hues of the modifications.

IRREGULARITY OF ANTERIOR TEETH.

The essayist wishes to suggest the following guide as to whether or not there should be any irregularity of the anterior teeth. If the face is broad in the region of the zygoma in comparison to length, it usually indicates that there has been a full development of the dental arch and little if any irregularity is indicated, such as lapping or rotating of centrals or laterals. If the face is very

broad in comparison to length, spacing of the anterior teeth is indicated so as not to have centrals too broad for the rest of the face and still have the distal of cuspids in good position to corners of the mouth. If the face is narrow and lacks full development, rotating or lapping of either or both centrals and laterals is indicated, the degree or extent of this irregularity depending upon the operator's artistic judgment but a knowledge of false perceptions or optical illusions is necessary to assure the retaining of finest harmony between face form and tooth form, in arranging the teeth. We must remember it is not so much what we have as what we do with what we have that gives us individuality.

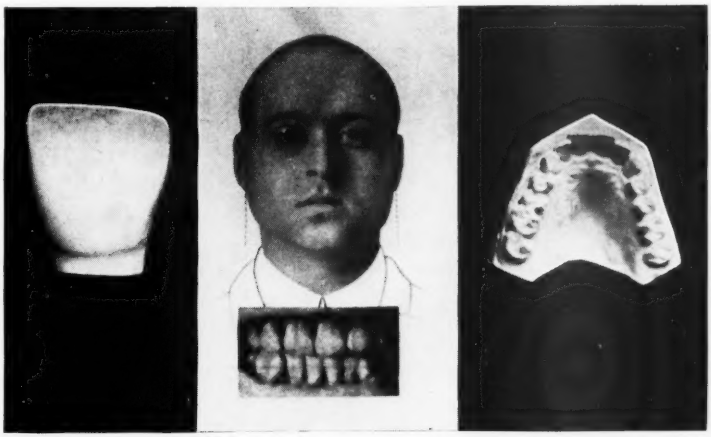


Figure 6.

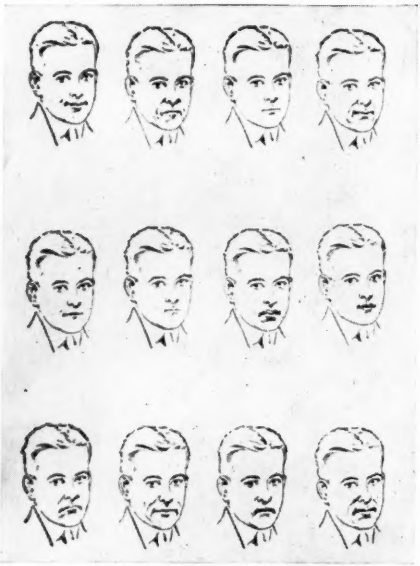
Harmony Obtained.

The harmony which may be obtained by the employment of this system, in the selection of artificial teeth, comparatively speaking occurs in different degrees of perfection. *First:* The lack of harmony, or inharmony. For example: When both the outline form and proportions of the face and inverted upper central incisor are unlike. *Secondly:* Approximate harmony or simple harmony. This is obtained when we combine square teeth with square faces, tapering teeth with tapering faces and ovoid teeth with ovoid faces; that is to say, that the outline form of the inverted upper central incisor is identical with the outline form of the face, but in which the proportions are unlike. When you first begin to employ this system, this will be the degree of harmony obtained. To obtain the higher degrees of harmony, clinical experience is necessary. *Lastly:* There is perfect harmony or as near as is possible to approach this ideal. This is obtained when the outline form and proportions of the face are identical with the general outline form and proportions of the inverted upper central incisor.

Nature does not always produce teeth in harmony with the face but, if nature has been kind, in childhood we have approximate harmony—the tooth form is there but the face has not developed. In middle age we have finest harmony—

the face has developed and is more in harmony with the tooth form. In old age we revert back to approximate harmony or to inharmony depending on the degree of abrasion, elongation or recession of gums.

application, there is little doubt but that the inharmony so frequently seen will soon be eliminated. To obtain best results it does require an esthetic sense on the part of the operator, but this faculty of being able to distinguish the



Illustrates the expression of the mouth. Each picture represents the one face, but the lines of the mouth have been changed and it shows the great variation in expression that can be secured by a slight variation in the appearance of the lips. The features about the mouth are easily distorted but difficult to restore.

Requirements.

The objection has been raised that there is too much art required for the average dentist to employ this method successfully. There is no doubt that not everyone will attain perfect or first degree harmony in all cases, but employed with any attempt at conscientious degrees of harmony in recognizing the beautiful from the unbeautiful needs only to be brought into use to rapidly develop the artisan to the artist. *What particular operation in the whole field of dentistry have we ever acquired accuracy in the performance thereof, without first starting at a lower and approaching a higher degree of ability?*

PREVENTIVE DENTISTRY THRU OPERATIVE MEANS.

By A. W. Bryan, D. D. S., Iowa City, Iowa.

THE full gist of this paper might be stated in a few words by saying that in any restoration placed in or upon a tooth, the true anatomical form of that tooth should be duplicated. This brief statement, however, is not sufficient. We all know, or should know, the anatomy of the parts we strive to restore; yet hundreds of fillings are made in which the anatomical form of the tooth is not even resembled. We see fillings in which no criticism whatever could be offered as to margins—margins which cannot be detected with the finest explorer, and a finish which is beautiful as far as lustre is concerned; yet many of these cannot be called real restorations because they do not restore the tooth to its original form and usefulness. They must be considered rather as temporary fillings, for they not only fail to restore the tooth to function, but are a menace to the tissues supporting it.

Dr. Friesell has sounded a timely warning in his article, "The Significance of Tooth Form in the Prevention of Oral Sepsis."[1] It must be admitted that tooth form bears a definite relation to the health of the supporting structures of the teeth, and if we do not restore these forms in our operative work, we are subjecting our patients to the menace of pathological conditions much more serious than mere recurrent caries.

Beautiful margins and finish are to be desired, but they are of no benefit in a tooth held in position by diseased tissues.

No one particular step or part of the tooth form can be designated as the most important, for every part of the restoration is simply one link in the finished chain. One weak link determines the strength of the chain as a whole; so one faulty place in a restoration determines its value, as a whole, to the patient.

Disregarding cavity preparation, or at least assuming that it has been carried out according to accepted teachings, we have several points to consider in the restoration of tooth form. These are: Contact points (both proximal and occlusal), embrasures, marginal ridges, fissures and grooves, line angles, cusp forms, and separation.

Proximate Contact Point.

The proximate contact point is the point on the proximal surface of a tooth which touches a neighboring tooth. (Black.)

Every structure has some definite foundation around which it is built, and the contact point may well be selected as the point around which the operator builds his filling. Upon the contact point as much as upon any other one thing,

[1] The Journal of the National Dental Association, July, 1919.

depends the future health of the delicate septum of gum tissue filling the interproximate space, and when that is destroyed the destruction progresses to the hard supporting tissues.

Figure 1 illustrates very forcibly the results of lost contact. A porcelain crown on the root of the first bicuspid shows no contact with the second bicuspid. The radiograph shows that not only has the gum septum been destroyed, but also the alveolar process to a large degree. This crown may have had contact at one time, but without proper restoration of the occlusal surface, the contact

Figure 1.

would soon be lost by the wedging effect of fibrous foods.

Too often we consider a "tight" contact as a good contact. We are deceiving ourselves, for I have seen many instances of restorations in which the contact was so tight at the time it was made that it was difficult to pass a ligature between the teeth, but later on, the patient would complain that a tooth pick had to be used at this point. So a contact is only good when built in proper relation to the rest of the tooth.

Embrasures.

In close relation to the contact point, and of necessity discussed with it, are the embrasures. Four embrasures bound the contact point; buccal, lingual, gingival, and occlusal, our discussion being limited to the molar and bicuspid region.

Many failures in fillings may be accounted for by the occlusal embrasure not being restored. Nature never places the contact point at the occlusal extremity of a proximal surface, but at varying distances gingivally, depending on whether it is in the bicuspid or molar region. The contact is also placed well toward the buccal, making the buccal embrasure smaller than the lingual. It has been the practice of some, in restoring the contact point, to place it a little nearer the lingual than normally found, thus evening up the embrasures. This is a mistake, for in so doing, we change the shape of the proximal surface of the tooth and subject the gum tissue to abuse, especially in the buccal embrasure. The food, instead of sweeping thru the embrasures and striking the soft tissues well up on the buccal surface, will spend its force nearer the apex of the septum, and finally result in the destruction of this tissue.

It is important, in reproducing the gingival embrasure, that its shape is not changed by failure to restore the proper form to the proximal surface. If the proximal surface of the filling is left flat or is given too much convexity, the gum tissue will not completely fill the embrasure in the one case, or its circulation will be interfered with in the other.

Marginal Ridges.

The marginal ridges with which we are mainly concerned are the mesial and distal of the bicuspids and molars, for these are the ones we are most often called upon to restore. Nature has made the marginal ridges of strong bands of enamel which are emphasized by the pits and fossa placed centrally from them. The marginal ridge might be compared to a dam in a stream. As the mill dam

diverts water and turns it into the mill race, so the marginal ridge diverts food to the embrasures (with the help of the fissures) and thus protects the contact point. The reproduction of these ridges is intimately connected with the reproduction of the pits, fissures, and grooves on the occlusal surface.

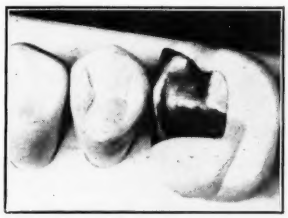


Figure 2.

FISSURES AND GROOVES.

Fissures and developmental grooves mark the union of lobes on a tooth, and nature has very wisely caused these fissures to occur at places where they would serve a very useful purpose. Especially are we interested in the fissures and supplemental grooves occurring near the marginal ridges. These are so arranged that they form a very effective guide for the food crushed in the fossa. Were it not for these fissures, more food would be thrown directly over the marginal ridge into the contact point. As it is, the food is directed buccally and lingually, well into the embrasures, thereby protecting the gum tissue in the interproximate space.

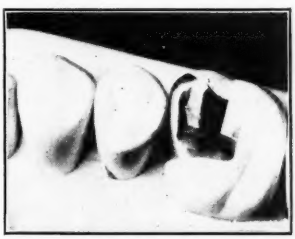


Figure 3.

Figure 2 shows a common type of filling in which a smooth cup-shaped fossa has been finished out with no fissures to guide the food. Figure 3 shows the same restoration with proper occlusal form. Figure 4 shows another type of filling found in almost any mouth with numerous restorations, and it is more to be condemned than that shown in Figure 2. No attempt has been made to reproduce the distal pit and the fissures leading from it, with the result that the marginal ridge is not pronounced, and forms no protection for the contact point. A first-class toboggan slide exists on this filling, extending from the crest of the transverse ridge to the contact point. No matter how tight the contact at the time the restoration is made, there will eventually be no contact and a resultant diseased interproximal tissue.

Figure 4.

Figure 5.

Figure 5 shows the same restoration,

changed only by working out a correct occlusal form.

Figure 6 shows a model made from a practical case corresponding to Figure 4.

Figure 6.

The radiograph of this case shows destruction of tissue in the interproximal space. The gums were swollen and red, due to the constant pounding they were receiving from food being forced thru the contact.

Line Angles.

In many cases caries have progressed to such an extent that the outline form of the cavity carries the buccal and

Figure 7.

lingual margins on the proximal past the line angles. The mesio-buccal and disto-lingual line angles on upper molars, and the mesio-buccal and disto-buccal line angles on upper bicuspids, lower bicuspids and lower molars, are well-defined angles, but there is a tendency to "cut them short" in our restorations. If these definite angles are not reproduced in our filling, the gum tissue is left unprotected against the food which is not carried far enough into the embrasure. Figure 2 shows a case of this kind with the mesio-buccal angle not restored. Figure 3 shows the same case with contour restored.

Cusp Forms.

In many cases of extensive caries it is necessary to reproduce cusps. The tendency of many operators is to leave the cusp short. This is due, perhaps, to the fear that the filling material will be too weak to stand the stress of mastication if built to proper contour. The

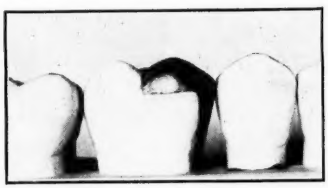


Figure 8.

cusp form should be restored and a filling material selected for the case that will offer abundant strength. If it is necessary to use a certain kind of filling material, the cavity can be so prepared that sufficient bulk will be given to assure strength. Figure 7 shows the form often given to a cusp restoration—so short that it does not occlude with the opposing tooth. Figure 8 shows the proper height and contour for this cusp.

Occlusal Contact.

Occlusal contact is an often neglected step. Many times we hear an operator speak of trimming a filling down until it is "out of occlusion." It should be trimmed "to occlusion," and it is a mis-

take to trim it until it has no contact with the opposing tooth or teeth. Occlusal contact is essential to the proper mastication of food, and if we do not restore it we are decreasing the grinding efficiency of the teeth to a greater degree than we realize.

Separation.

Upon the establishment of the proper interproximal space, hinges our ability to give the filling the correct anatomical form. In cases where contact has been lost for some time, it means an expenditure of time and effort to regain the lost space, but the reproduction of the true form of the tooth is impossible without it, and an obliterated interproximal space means diseased tissue at this point.

Resume.

Summing up the essential points of the paper we find that:

The contact is one of the most important points of the restoration, and might well be selected as the foundation around which the filling is built.

The marginal ridge is the protecting barrier for the contact point.

The fissures are natural guides for directing the food away from the center of the marginal ridge, over into the embrasures, where the cheek and tongue may roll it back again to the occlusal surface for further grinding. Separation is essential, for without it we cannot reproduce true tooth form.

All of these are so intimately and definitely related that the neglect of one decreases the value of the others. And the purpose of it all is not so much the protection of the tooth itself from recurrent caries, for good margins will assure that, but the protection of the supporting structures, without which, a tooth with no caries whatever is useless.

DENTAL SERVICE FOR THE OTHER EIGHTY PER CENT.

By Guy S. Millberry, D.D.S., San Francisco, Cal.

(Read before the National Dental Association at Its Twenty-third Annual Session, New Orleans, La., October 20-24, 1919.)

SOME enterprising person by mathematical calculation, if not by mathematical accuracy, has determined that eighty per cent of the people of America do not receive dental service. While statistics are conceded to be the life-blood of any health movement, we are, nevertheless, weary of reading the reports of investigations of our school population thruout the land indicating that no reduction in the prevalence of dental disease is being accomplished by the dental profession, except in a few isolated instances. I take it that this is our problem and no argument can be pursued until certain premises are submitted upon which we may all agree.

1. The two most important things in life are food-energy and man-power, and the greatest human problem is to convert food-energy into man-power in an economic and efficient manner.

2. Sound teeth and a healthy mouth are necessary to the conversion of food-energy into man-power, and, therefore, dental service is either essential or incidental to this great human problem.

3. One hundred per cent of the people above the age of three years, except the edentulous dentureless cases, need dental service at least twice a year.

4. The best means of preventing dental disease and its systemic sequela, is by practicing mouth hygiene.

Will you grant these premises?

There must be some reason why a very large proportion or our population does not receive dental service. Being a self-obsessed as well as a self-made profession, we have not studied this problem and have given little thought to those who, thru fear, ignorance, lack of facilities, or lack of funds, have been unable to avail themselves of dental service. Our practices have been builded by a system of elimination. The undesirable and non-productive element, serving as a hindrance to our financial betterment, has been gotten rid of. This is not an unusual thing in the economic world for it is considered good business in the mercantile and manufacturing industries, in animal husbandry and agriculture, but what of the discards in the field of medicine.

Desirable and dependable agencies for the prevention and treatment of dental disease are wholly inadequate and, therefore, some other means must be employed for public health in paramount to all other things. Witness the recent pandemic of influenza.

Can we continue to advocate measures for the alleviation of human ills and absolve ourselves from the responsibilities of providing them? Have we no obligations to society, humanitarian if not economic, collective if not individual?

Should we not place the resources and blessings of dentistry within the reach of

all classes of society? Unless the dental profession is willing to attack and solve these problems, some one will unquestionably undertake the task for us, and perhaps not wholly to our liking, nor for the best interests of the nation. With these thoughts before you, may I presume to offer a means to that end.

Three things are necessary:

1. Service.
2. Facilities.
3. Publicity.

Service.

It is an acknowledged fact that there are not enough dentists to provide dental service for our population. In fact, there are not enough dentists to provide service for our school population. If we believe this, then the first essential is to provide more dentists, or provide for a division of labor whereby the well-trained dentists will be able to employ and direct the activities of more than one person, in order to provide more service for the people who choose to command his services. This means the employment of assistants, hygienists, mechanics, and secretarial service. While this is followed in a few localities with success, it is not the usual plan, and it may well become a new order of procedure, thus establishing a precedent for the young men being trained in our institutions today who will be your successors a decade hence.

Our institutions of learning must be subsidized and developed to train more men for dentistry, with auxiliary courses for hygienists and mechanics, just as our medical schools and hospitals are providing assistance for our medical colleagues by training nurses and technicians. Subsidies for the support and maintenance of such institutions may come from the state or from private endowment, the former by taxation, a more democratic way, the latter by gift or by adopting measures now being advocated by men of broad humanitarian beliefs who are diverting a part of the profits of patent royalties, or corporation or commercial enterprises into channels for the public good.

Scholarships must be provided so that the youth of our country who are financially unable to pursue this vocation, for which they may be equally as well fitted as their more richly endowed associates, will be given an equal opportunity. The largest proportion of the matriculants in our dental schools enroll as the result of a favorable contact or association with some dentist. Therefore, the diverting of more of the youth of our land into these professional channels rests with you in helping to supply the service so badly needed by the other eighty per cent.

Facilities.

In private practice men are now inclined to limit their practice to the accomplishments of one pair of hands. Some men will continue to practice in that way. If, in the course of events, it is deemed advisable to expand the facilities in private practice, it can be accomplished in two ways.

First, by training the student in such economic policies during his college residence so that he may become familiar with such procedures, and second, by providing the opportunity for employment in your offices for the recent graduate, until such time as he may become an associate with you or engage in practice for himself.

Increased facilities for private service mean a larger responsibility. The labor should carry its own overhead expense and a fair margin of profit, the distribution of which must include a proportionate amount for your responsibility and business acumen. Excessive profits on labor will result in an inharmonious relationship between you and your employees which, otherwise, might prove mutually advantageous. The guaranteed income with a profit-sharing plan is the

best incentive to good work and the young graduate of today will welcome such an opportunity. Such a plan will give service to a certain portion of the discards, an advantage to themselves and the profession.

A large number of our people, however, must be cared for by means of a group plan: i. e. by the establishment of public dental dispensaries conducted on a self-sustaining basis but not for profit. To begin with, such offices must be subsidized by the state, county, or municipality, or by private endowment, in order to become established, tho such subsidies may be returned from a sinking fund provided in the plan. Dispensaries on the basis of voluntary service are passing, chiefly because adequate honest service to patients is the primal factor and to maintain this constantly, a proper remuneration for professional service must be established. This group plan makes the economic position of the young professional man much more stable, and his opportunities for professional study and advancement are larger.

Legislation looking toward that end successfully passed the California Legislature this year but it failed to received the Governor's approval.

Briefly the plan is this: In communities able to sustain them, there may be established, offices with from three to ten chairs, with the necessary additional equipment. In the larger cities several ten-chair offices may be established in different localities. Each of the larger offices will maintain departments for plate prosthesis, crown and bridge prosthesis, general operative work, extraction and surgery, radiography, orthodontics, and mouth hygiene and prophylaxis. Men and women whose capabilities or inclinations lead them into any of these fields will be employed.

Managed by a competent director with a personnel of dentists, dental hygienists, dental mechanics, office, clerical and social service assistance, the dispensary can be operated on a cost basis with a budget system just as successfully as any other enterprise. The details of adequate salaries on a graded scale, fees, audits, purchasing and collections together with publicity of an ethical nature may be carefully worked out.

To the *public,* such a plan would mean honest dental service at a reasonable fee. It would mean truthful information as to the care and conservation of the teeth. It would mean a higher standard of public health with a reduced cost to the taxpayer. Service in such dispensaries could be limited to that group of persons whose income now or at any time in the future is so small that private dental service is out of the question and therefore no dental service is received. Social service will limit this group just as it does in all large organizations today.

To the *employees* it would mean that the dentists just graduating from college, who are broke or those migrating from other places, may find employment and an opportunity to choose the type of dental work they wish to perfect themselves in, as well as a city in which they may choose to locate. During the period of employment they will naturally form social acquaintances, who, with the patients that may come to them either from or thru the dispensary, will enable them to engage in practice there or they may choose to go to another city until they find the opportunity they desire.

It would afford steady and well-paid employment for the dentist who has not sufficient business acumen to conduct an independent practice, as well as those who prefer salaried positions to the hazards of general practice. Properly safeguarded, and in cooperation with the State Board of Dental Examiners, it would provide an opportunity for licentiates from other states to gain employment under proper supervision pending the examinations or during the interval between them. Such a plan might ultimately assist in adjusting the difficulties

now existing in reciprocal lisensure. To the other employees it would mean regular employment in terms equal to their qualifications and efficiency.

For the *dental profession* it would provide an opportunity for community service in the interests of humanity by shaping and directing the policies in dental practice for society in general at no great sacrifice of time. Such dental dispensaries as are proposed should be linked up with the dental societies in all states and counties, with active committees cooperating with the directors in each community.

It would offer an opportunity to shape the destinies of the young men just out of our school who, thru necessity, are obliged to seek employment, and who very frequently find their way into an environment which knowledge and experience tell us is not the most desirable. It would also mean that a place is available for referring that class of practice so frequently discussed in your offices, the persons whom you are asked to consider but those incomes or social position do not justify the payment of the fees required in private practice. They need dental service and constitute a large part of the other eighty per cent.

Publicity.

Since ignorance is one of the principal reasons why four-fifths of our population does not receive dental service then education is the antidote, and since most people receive their advanced education thru the daily press, then the best means of education is thru such channels. To quote Mr. Chester H. Rowell, editor of the Fresno (Calif.) Republican, in a paper presented before the Pacific Division of the American Association for the Advancement of Science:[1] "Medical science, because it is subject to hostile controversy, stands particularly in need of publicity, not merely as to the results but as to methods." And again, "It may become the duty of the American, even at the cost of some repugnant self-exploitation to make himself (or his profession) personally respected by the democracy. It cannot be done in the laboratory and in the scientific journals alone."

If there is any phase of human activity where ignorance or a little knowledge is a source of danger it is in the field of hygiene and public health. A plan of publicity, truthful in expression, lucid in character, and comprehensive in scope will be a necessary part of this service. First, it will be the means of educating the public as to the importance and value of honest dental service and will relieve the dentist in private practice of the financial responsibility of carrying on this dental propaganda for clean teeth and a healthy mouth, yet giving him an indirect control thru the committees appointed by his society, working with the director. Secondly, it will purposely and particularly tend to stimulate the demand for dental service to sustain the dispensaries.

If we can agree upon the four premises previously mentioned, viz., that the important things in life are intimately associated with the mouth and teeth and that the majority of the people are entitled to dental service looking toward the prevention of dental disease, then we must be prepared to change the existing order of things in dentistry in part at least.

Much has been said regarding this problem. Thoughts and ideas have been paraded in philologic array, much as human kind, uniformly constructed, is dressed in a wide variety of modes and costumes. Action, however, seems to have been submerged beneath waves of words. Optionated men find it difficult to reconcile their views to changed conditions, but the old order is changing and we must endeavor to meet the problems as they come to us now, not as they were a decade ago.

Adverse criticism ranging from a

[1] Science. August 15, 1919.

charge of violating the Code of Ethics to an effort to control the practice of dentistry thruout an entire state, has not modified the writer's opinion that some means must be provided to furnish honest dental service for the other eighty per cent, which shall be:

1. Primarily preventive in character.
2. Restorative and Corrective where necessary.
3. Available in terms of the means of the individual and at times or under conditions which will not impair his income.
4. Conveniently accessible to the majority.
5. Supplemented by truthful information, and divorced absolutely from charity.

DISCUSSION.

E. L. Pettibone, Cleveland, Ohio.

The essayist has made no mention of the newest agency in caring for the other 80 per cent, the industrial dental dispensary. These dispensaries are multiplying very rapidly and altho they appeal to the employer as a means of increasing efficiency and cutting down the labor turnover, they are acting as a very great aid to good health by the far-reachingness of their educational value in disseminating mouth hygiene knowledge. There are now seventy-two firms in the United States having one or more dental dispensaries and the number will, we believe, be doubled each year.

We, in Cleveland, gave up the idea many years ago of trying to educate adults in mouth hygiene. The only way to educate any considerable portion of the public to mouth hygiene, or any other branch of preventive medicine, is by education of the children in the elementary schools.

We began this in Cleveland with the last generation and dentistry or mouth hygiene needs very little publicity—especially of the newspaper variety—in our city.

We have quite adequately provided for most of the other 80 per cent too.

The Board of Education conducts six dental dispensaries within the public school buildings. The Public School physician examines all children's mouths at the time of the general physical examination; notices of defects and needed treatment are sent to the parents with information that if parents are unable to pay, they can have free treatment at the dispensaries. The Cleveland Mouth Hygiene Association, one of 67 participating agencies of the Cleveland Welfare Federation, maintains three dental dispensaries located in three of our seven health centers which are under the Division of Health of the City of Cleveland.

In these dispensaries, we care for the children attending parochial schools and certain adults, especially tuberculous people, who are being allowed to remain in their own homes.

It is the style to clean your teeth in Cleveland and there is a very great improvement in the mouths we see today and those that came to us ten years ago.

Our School Board found out many years ago that it cost ten times as much to carry a child over a year as it did to fix his teeth and they are so limited as to funds that they employ every sensible means to save money and they consider our dispensaries such a means.

After January 1, 1920, dental supervision of all school children will be required by law in Ohio.

The legislature of West Virginia last year passed a law providing dental dispensaries for the school children of McDowell County. This law provided that the expense be borne by the taxpayers and that they should have a referendum election on it. The election carried by a large majority and over

twenty dispensaries are being established.

Why not try that for your other 80 per cent? It will eliminate it entirely in ten years. (Applause).

Prof. C. E. Turner, Boston.

I certainly appreciate the willingness of your chairman and your section to listen to a man who is not a dentist, but only a mere professor of public health. I have thoroly enjoyed the clear presentation and the valuable discussion in this paper and in the comment which has already been made upon it, and as a member of the public health profession I want to say that we, as workers in this field of prevention, have a very high esteem for your profession, and we feel very keenly the humanitarian aspect with which your work is conducted, and the chivalrous way in which you, with the medical profession, as a whole, meet these problems of caring for the other 80 per cent; and I think I could almost be voicing the sentiment of the whole public health profession in welcoming you to a closer cooperation with public health officers in solving this problem, which has been brought to you in the paper this morning. If I might center what I have to say upon a definite subject, it would be to urge upon you perhaps even more to familiarize yourselves with the work which the public health profession is doing. It has been my privilege to teach general hygiene to the dentists at Tuft's Dental School for some few years, and at this meeting the Associated Dental Schools have decided that in the extended curriculum, a course in general hygiene will be included.

There are several reasons, it seems to me, why the dentist should extend his knowledge of general hygiene. In the first place, he needs the very latest knowledge of personal hygiene and prophylaxis for his own health, and for the benefit of his patients, because I am sure you men in general practice find that you are asked questions about everything by your patients; more people see you than the medical practitioner. You are a doctor, and you know what the word "doctor" means to the layman; he does not distinguish between the doctor of dentistry and the medical man. He feels perfectly free to ask your advice on questions of hygiene, and if that advise is wisely administered, it is certain that a prescription of proper hygiene may do more for your patient in a great many instances than a prescription of drugs which the physician might give him in correcting the accompanying conditions. This furnishes a definite opportunity for the dentist to exert a wider influence, and increase the esteem of the profession in the eyes of the community. And the community needs this service on the part of the dentist, this responsibility which was so excellently described in Dr. Millberry's paper.

Just what do I mean by getting a little more information? I mean that is seems to me advisable that the dental practitioner should get some of the things we are trying to give our boys over at Tuft's public health organization, a knowledge of the important facts with reference to public health, infection, immunity, the control of water, waste disposal—not that you are to become sanitary engineers, but I believe a man so closely related to the medical profession should have the fundamentals well in hand. The recent discoveries on the question of personal hygiene and prophylaxis, which I feel in the last four years have made a real science out of that subject, should be well understood.

These calls upon the dental practitioner, these duties in taking care of the other 80 per cent, lead you directly, I believe, to a cooperation with our profession which we heartily welcome; and you will find that the public health profession will not make unreasonable demands on your time. It will try to assist you in establishing that type of dental organization

which will take care without fees except to the state, *only* of those people who cannot pay some other way; and it will help you to establish a system whereby you can use the younger members of the profession in taking care of this group of people.

May I urge you to a wider interest and cooperation in the things that we are doing? I might say that I have given a lot of time to this thing within the last few years, because my work in the dental school has prompted me to prepare a concise statement of these fields, particularly for the dental profession, and that is something that has never been done before. There has never been any text or manuscript to which the dentist could turn for a consideration of the public health field from his own viewpoint. (Applause.) I appreciate your kind reception. (Applause.)

John D. Millikin, San Francisco.

Our profession has been accepting this eighty per cent estimate for many years but no one seems to know where these figures came from. As far as it can be determined, they came about by the publication of the fact that the army dental corps were doing only 20 per cent of the dental work for the soldiers, with one dentist to every 100 enlisted men.

The army had accurate statistics, and at this rate to do only 20% of the work, it would require 100,000 dentists in the United States to attend to the 100,000,000 people, or twice the number of dentists as are now in the United States.

If you wish to know how well you would care for one thousand patients, ask any army dental surgeon who had tried it. If we were to take one new patient besides our old ones, each day, for 250 working days in a year, each dentist would then be taking care of one-fourth as many patients as the army dental surgeon. There would have to be at this rate 400,000 dentists in the United States to do only 20% of the work.

These figures are given in order to bring to your mind the enormous problem we have before us.

These figures will also show how impossible it is to do the corrective work with the number of dentists we now have or can have in the next generation. It would seem if for no other reason, we should devote our energies to the prevention of dental disease to such an extent that all preventive dentistry could be taken care of by trained hygienists, requiring but a limited amount of skill.

Should this be undertaken, it will require years to furnish enough hygienists. Appreciating that we need more dentists and dental hygienists, it is our duty as dentists to encourage both young men and women to take up this profession.

Dr. Millberry has also called our attention to a fact that we must not overlook, and that is enlarging our offices on a cooperative plan, thus doing more and better dentistry. The close relationship of men and women along the same lines of endeavor will naturally result in increased knowledge. It may be possible that this will not be accepted by the older men of our profession, who may be satisfied with the present conditions, and if such is the case, Dr. Millberry's plan of teaching the dental students along these lines will be necessary, and all dental colleges should take this step at an early date. It may be that should the dentists want young men just entering the profession, and the colleges did not educate them to the value of entering some office for a limited time, that this scheme would fail, so it resolves itself into the urgent necessity of the dentist and the dental colleges entering into the closest cooperation.

Your careful attention is directed towards that part of Dr. Millberry's paper which deals with the Dental Dispensaries. This plan is being adopted to a limited extent in California. This plan provides for young graduates without funds and prevents the drifting dentists

from entering the offices of the quacks. It provides for the dentist coming from another state who may have failed to obtain his State license and is without funds. It also provides for your patients whom you would like to have receive good dental service, but who are unable to pay for same.

It may be that the organized profession of California knows the value of publicity more than any other state, for the reason that last year we went thru an election campaign when our State dental laws were attacked by one of these dental quacks who spent eighty thousand dollars to get our State dental law changed to suit his style of practice, with the result that the dentists of California had to unite in a publicity campaign at the cost of nearly forty thousand dollars, to offset the intensive advertising campaign offered by that dental quack who had, for years, spent on an average of thirty thousand dollars annually in advertising, while our profession had spent nothing up to the time we found ourselves compelled to.

For those wishing to take up this work, it is suggested that they take Dr. Millberry's conclusions and apply them as their local conditions will permit. (Applause.)

SUGGESTIVE THERAPY AND TREATMENT OF ABNORMAL CONDITIONS DURING AND FOLLOWING INJECTIONS.

By P. G. Puterbaugh, M. D., D. D. S., Chicago, Illinois.

(Read before the National Dental Association at Its Twenty-third Annual Session, New Orleans, La., October 20-24, 1919.)

IN CHOOSING an anesthetic for operative work there is, at present, considerable room for much-needed reform. The time of choosing the anesthetic to fit the operator's convenience, instead of choosing it to fit the operation and the patient should be a thing of the past. Generally speaking, there are two classes of patients viz: those who are with the operator and who are willing to assist; and those who are not. The majority of adult patients may be placed in the former class. Many of the latter class may be placed in the former if a reasonable amount of time and patience be given them in order to engage their interest and cooperation by building up their confidence in the anesthetic and operator before and during the actual operative work.

Those who, from their nervous make-up, persist in remaining in the difficult to control class should have general anesthesia when an anesthesia at all is indicated. This class will also include practically all children under fifteen years of age. Then for the very reason that cooperation of the patient is essential to success in local anesthetic operations, the child and the hysterical, the neurasthenic and the neurotic are to be considered as unfavorable subjects. This does not necessarily imply that local anesthesia is in any way difficult

to produce in any patient but that it is often difficult to operate against their antagonism and they are likely to suffer severely as a result of their mental anguish.

Dr. Crile, in his excellent work on Anoci-Association has pointed out in an undisputable manner that psychic impressions of a disagreeable character will produce marked degenerative changes in vital structures thruout the body and the operator will do well to bear this in mind in local anesthetic work using enough positive suggestion in conjunction with the anesthesia to prevent serious injury from this source.

It should be considered advisable whenever possible to see the patient one or more times prior to any attempt at local anesthesia, in the room where the operation is to be performed, for examination or preliminary treatment. In this way they become somewhat accustomed to the surroundings, become acquainted with and acquire confidence in the operator. During this preliminary examination one should be particularly careful to be absolutely honest and fair to the patient. Assure him that the operation will be painless and that the application of the anesthetic will be trivial. Explain that there will be some soreness and after pain following the operation, but that the anesthesia will be perfect. Then be skillful and honest enough to make your promise good when that time arrives.

In operating under conductive anesthesia the room should be reasonably cool and well ventilated—this should be insisted upon since the over-heated room is bad for the patient because it often induces a sense of suffocation and a feeling of air hunger if any excitability be present.

Have everything in readiness for the operation before the patient is placed in the chair, that there may be no hitch in the proceedings. All unnecessary display of instruments is to be discouraged and with a competent assistant may readily be avoided by covering the previously arranged instrument table with a sterile towel before the patient is placed in the chair and keeping it out of his sight while the operation is being performed.

It is an easy matter to keep the hypodermic syringe outside of the patient's field of vision, at least until after the first injection has been made and by following this practice there is much less danger of the patient moving while the needle is inserted deeply in the tissues.

Adopt a technic in all operating by which you will proceed step by step in a logical sequence in order that time may be conserved and the patient's confidence be held.

At the time the needle is inserted say "Now you will feel this just a little" and while the injection is being made, "There now, this is the most that I am going to hurt you." While waiting for anesthesia explain the symptoms which are to follow in chronological order and the patient will welcome them when felt instead of becoming frightened. For example: in the mandibular injection anticipate the tingling and sense of swelling in the lower lip; stiffness of the tongue; sense of heaviness in the entire mandibular region and anesthesia of the face on the side anesthetized. This will, in a great measure, divert the patient's mind from the anxiety of the operation and will arouse interest instead of dread so he will work with the operator instead of against him.

In the former days of cocain, we found that with increasing experience in its use, there were fewer patients who exhibited signs of cocainism until it was only occasionally that untoward results were experienced; and those were usually in individuals who possessed a true idiosyncracy to the drug. Analysis of this experience convinces me that a great many so-called toxemias today are

nothing more or less than temporary prostrations due to over excitation and are of an entirely nervous character. That these may be reduced materially by suggestion is beyond question.

This depression which is apparently the first stage of syncope and results from the dread of operative work, reaches a climax most commonly while, or immediately after anesthesia is induced. It is often an aid in general anesthesia but is of some annoyance because of delay in local anesthetic operations. The signs and symptoms of general muscular weakness, parlor, weak pulse, nausea and cold perspiration are in sharp contrast to those of overstimulation occurring from the local anesthetic solutions employed today. The experienced observer will detect the onset of these symptoms before the patient recognizes them and will not ask him if he feels sick or about to faint. Instead he will quietly tilt the chair back, direct the patient to relax completely, close his eyes and rest for a few minutes. He will show by his actions that he is interested in the patient's comfort, but sees no cause for apprehension and by the time the anesthetic has reached its maximum intensity, the symptoms will usually be improved to the point that the operation may proceed. It is a very rare instance in which the prostration ever continues to the point of complete loss of consciousness. If paleness of the mucous membrane persists after a reasonable time for rest has been allowed, the inhalation of a drachm or two of ether from a napkin will always whip up a sluggish heart action and these symptoms will quickly vanish.

Partial syncope, however, usually needs no treatment other than suggestion and placing the patient in a recumbent posture.

In my opinion the relaxation secured in those few minutes in the neurotic patient is to him most valuable, inasmuch as it gives the nervous system a chance to throw off the tension it has been laboring under and after a few minutes' rest to assume its normal equillibrium. This type of individuals usually become good operative patients following the period of relaxation. Above all things do not allow them to become frightened or to think there is anything wrong, and the outcome will be entirely satisfactory.

With the discovery of novocain by Einhorn in 1905 and its substitution for cocain, genuine cases of toxicity dropped to almost nil. Two per cent novocain solution may be employed almost with impunity in amounts up to one ounce if the suprarenin content be kept low enough to avoid disagreeable symptoms from that source.

In the solutions popularly employed today the suprarenin is in sufficient quantity to produce toxemias in many patients, if the injections are rapidly done in amounts of from two to six mils. of solution. Many operators have tried to overcome this tendency by reducing the suprarenin, but by lowering the suprarenin content the ischemia produced about the site of injection will often be found insufficient to localize the novocain in the area long enough to secure perfect anesthesia. Since it thus becomes advisable to reduce the adrenalin dosage, some method to prevent its too rapid absorption should be practiced. If the anesthetic solution be injected very slowly, allowing one or two minutes in which to empty the syringe, fewer patients will exhibit the full, bounding, intermittent pulse; precordial pain, flushed anxious expression, air hunger and sense of impending danger that result from suprarenin toxemia.

When toxic absorption symptoms do occur, however, they are of sudden onset, short duration and occasionally quite severe. Here again ether by inhalation serves well to tide the patient over the few minutes of distress and serves the

purpose better than anything that I have ever tried.

One local condition that results very frequently from the use of infiltration anesthesia in the lower jaw, which is most distressing to the patient and at the same time annoying to the operator, is that of dry socket. This results from the failure of clot formation due to the suprarenin infiltrated at the site of operation. The pain resulting from the osteitis induced by irritation to the exposed alveolus from the oral contents is so severe and persistent that I consider it inadvisable to infiltrate for extraction, especially of the lower posterior teeth. Conductive anesthesia does not leave this condition and should be practiced if for this reason alone. The treatment of a dry socket is far from satisfactory at best, but the pain may be relieved for from 8 to 12 hours at a time by placing two or three grains of novocain crystals in the bottom of such socket and covering with gauze saturated with bismuth paste or vaseline to exclude saliva and retain the novocain in order that it may be slowly absorbed.

Euroform paste (Buckley) will often give considerable comfort but seems to lose its analgesic properties after one or two applications. Hot fomentations externally may often be used to advantage. In spite of all treatment the dull constant mandibular pain will often last from one week to ten days; which means until granulation tissue covers the exposed alveolar process. The best means of treating this condition is prophylaxis in avoiding infiltrative anesthesia and doing more nerve blocking—especially for extractions.

Hematoma formation from puncture of a blood vessel, while somewhat disconcerting to the patient, is of little consequence. They are usually quite deeply located and cause no symptoms other than moderate swelling and stiffness and the discoloration of tissues which takes from ten days to two weeks to fade out.

Injections in the zygomatic fossa may cause anesthesia of the extrinsic muscles of the eyeball causing loss of voluntary control, accompanied by a feeling of dizziness but recovery takes place within a half hour or so without treatment. It in no way interferes with the operation.

In conclusion, I would say that the operator who knows the cumulative effect of repeated positive suggestion, who applies it by word and action in his daily practice, will find himself capable of doing surgery under the influence of block anesthesia that was hitherto undreamed of by the oral surgeon. This can be done without the danger of psychic shock for the great majority of patients and without the danger and disagreeable nausea attending the recovery from prolonged general anesthesia.

Infiltration anesthesia should be displaced in the majority of instances where it has been employed in the past by nerve blocking which does not interfere with wound healing.

Most patients may be talked out of a threatened syncope if the operator and attendant are tactful, and the feeling of dread toward operations in general by the layman will be changed in the near future with the end result that the time of recovery will be shortened and patients' lives will be lengthened.

THE FOCAL THEORY OF INFECTION IN ITS APPLICATION TO THE TEETH.

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PART II.

(Read before the Chicago Dental Society, February 17-19, 1920.)

PYORRHEA and the dental abscess have been heralded about by popular medical literature as the cause of a most extensive and varied list of diseases. Rheumatism, heart trouble, kidney diseases, appendicitis, gastric and duodenal ulcer, pneumonia, spinal meningitis, insanity, fallen arches, etc., etc., are a few of the troubles recorded and attributed to dental diseases.

It is apparent to anyone who has even an elementary knowledge of such widely different diseases that to expect to find common cause for all is certainly most extraordinary. If but a small part of the claims made are true then an edentulous condition can be the only safe one.

So far as diseases go some are of infectious origin—others are not. But so far as the infectious view of disease is concerned, one microorganism is held responsible for one disease. The action is specific. The K. L. causes diphtheria—microorganisms very similar in appearance do not. The typhoid bacilli cause typhoid. But to attribute all these various and none too well understood diseases to one microorganism, and that microorganism being present in food, drink, the air, the dust in all healthy mouths, is an unheard of view to take of disease.

It is the so-called Streptococcus viridans that is or was originally held to be the cause for all these diseases. The mere presence of this microorganism is conclusive evidence to the exponents of this theory that the cause of the disease has been found.

Its presence in a blind dental abscess, and in, for example, a diseased kidney, convinces the authors of this theory that the dental abscess causes the kidney trouble. On this basis it is equally reasonable to conclude that the kidney trouble causes the dental abscess. The reported findings of Streptococcus viridans in different areas with an idea of establishing a connection between them are very questionable. Krumwiede says that the deduction, that the cultivation of Streptococcus viridans from a focus is proof that the local focus has been found is a source of error. Streptococcus viridans is not a specific microorganism, but a group, heterogenous in character and not a distinct type like the typhoid bacillus, all of which are alike. The presence of the Streptococcus viridans alone amounts to nothing, for it is present in healthy mouths from youth to old age. It is only suppressed in the

mouth in the case of a frank disease, when the type of microorganisms associated with the particular disease predominates, and remains usually for about ten days after the abatement of the trouble. For example, in the case of pneumonia the type of pneumococcus associated with pneumonia appears in the mouth, and remains for about ten days after the abatement of the trouble.

By certain cultural methods it is possible to show that many of the internal organs contain microbic life; but nothing happens. Hartzell states that in the pulps of, I believe, thirty-seven sound teeth, about twenty show infection. This does not signify disease. In the entire animal kingdom no such thing as bacterial sterility exists. There is no such thing as a sterile mouth, nor has nature intended that there should be. Disease deals with types and kinds of bacteria, the media upon which they grow or do not grow, and their environment. The general invasion or local invasion of the alimentary microbic life depends upon governing factors which are not wholly understood. We have seen in our previous paper how such microorganisms act in pyorrhea. A previous preparation of the parts is necessary for their parasitic growth. The modifications which occur in bacteria by alterations in their media show that tissue conditions and proper tissue functioning are the practical things that control the proliferation or suppression of the omnipresent bacterial life of the kind under consideration. It is from their environment that such bacteria acquire such vague and temporary characters as elective affinities, etc.

In the experimental work that is used to support this theory young animals, intravenous injections and massive doses are used. It is replied to the criticisms that these doses are excessive and do not fairly represent what occurs in the human body, that at times (at times is not often nor always) it is possible to produce the desired pathological effect with smaller doses. These doses range from what in the case of man of 70 kilos. or 154 lbs. would be from ten quarts to a cupful. What is termed a small dose is one or two cupfuls of microorganisms in the case of a man of 154 lbs. Pure cultures are not injected. The granuloma, the abscess, or pyorrheal pus, and the pulp are dropped bodily into ascetic-dextrose broth, allowed to grow, and the broth containing this conglomerate mixture of bacteria, altered and decomposing tissue and its morbid products are injected en masse into animals. Even such a dose may only at times produce a pathological effect based on the intravenous injection in the rabbit. Another objection raised is that intravenous injections are necessary to give the desired results. To represent more nearly what actually occurs, that is, that it may pass thru tissue, massive doses are given intraperitoneally, and again only at times is it possible to produce effects. Now, we do not often deal with doses ranging from a cupful to five or six quarts from dental sources. Yet, to produce such results as are described, they must be used. In the small dose of a cupful of microorganisms, together with the other putrefactive products mentioned, possibly or occasionally an effect is obtained. No attention is paid to the physiological effects produced by the forcing of such a quantity of material into the circulating system,—notice only is taken of the streptococci present. Others have inoculated rabbits with ten to fifteen c. c. doses of streptococci of this type for three months and nothing has happened. Perhaps their cultures were purer. But all agree as to the virulency of this type of microorganism. It is exceedingly low. It can be nothing else. It never in any degree becomes virulent. It is for this reason Rosenow calls their action a mechanical one.

They are supposed to plug the finer vessels in certain regions, and they produce embolic effects. Hence the necessity for a direct and uninterrupted route. Hence also the need for enormous doses. These requirements are hardly met with in dental troubles, as is obvious to anyone that understands dental diseases. The route of entrance into the system is not direct for the microorganisms. They meet impediments at every turn. The white cells and other phagocytic cells meet them and digest them. The blood assists in this action by aglutination, by bactericidal and opsonic properties, by the production of anti-bodies and anti-toxins. Should they succeed in overcoming these forces of protection, the fixed tissue cells dispose of them. Thru the lymph stream they meet a similar fate, for by the cells they are carried to the lymph glands and there digested. The object of a separate lymph system may be to guard against infection, as Mathews points out. Augmented immune forces are created if needed. The system is well protected. This is never to be lost sight of in considering highly experimental and speculative theories. One interesting experiment showing the ability of a single organ of the system to dispose of infection is that of liver perfusion. If a heavily infected material is perfused thru the liver it comes out sterile.

All these effects produced by such animal experimentation may be produced with more regularity and in a higher percentage of cases by other means. For example, in the formation of gastric ulcer, Mann by removing the adrenals produced it in 90% of his cases, as against 40% claimed by Rosenow. Carlton, Jacobson, in 75% of their cases by removal of the thyroid; Elliot also by removing adrenals; Friedman by thyroid removal; Celler and Thalhimer studied experimental gastric ulcer, and *could not be sure that these effects produced by bacterial injection were ulcers.* These lesions heal quickly. Ulcers are common in laboratory animals that have not been treated. Injection of pilocarpin and adrenalin produce gastric ulcers. They may be produced by mechanical and chemical means. As far as arthritis is concerned, it may be produced in many ways. In my studies upon nutrition I have stated that animals upon deficient diets become exceedingly rheumatic. Their joints become swollen and sensitive. The legs are malposed and crippled. They lose the use of their hind legs and drag themselves painfully about. A correction of the diet will be followed by a complete recovery, if the treatment has not been too long continued. Dr. Nathan in his work upon arthritis relies for treatment upon a nutritional rectification. In many of our arthritic hospitals complete recovery followed nutritional correction in many cases before the infectious idea was suggested. In reply to my criticism of Rosenow's findings, he asks, "But what is the cause?" It is the result of adrenal or thyroid removal, or it is a result of mechanical, chemical or nervous or other disturbances.

Rosenow accounts for the localization of these microorganisms on what he terms the principle of elective localization. That is, microorganisms taken from gastric ulcer, for example, will tend to produce gastric ulcer. On this principle, microorganisms taken from a blind dental abscess will tend to form only dental abscesses. If this conclusion is sound, and I have no doubt that there is something in it, we need have no fear about dental abscesses causing anything but dental abscesses.

When the principles of immunity are applied to these non-hemolytic organisms, it is found that they do not work out properly. Dr. Rosenow suggests that they be revised. Where lies the trouble, in the known, tried and proven

principles of immunity, or in this theory? It is in the theory.

It is difficult to show microorganisms in sections of granulomas. Dr. Rosenow cultures these sacs for several hours before he sections them. This mass of tissue is removed from the body and from all its vital and protective forces. These are fully as potent as the infective factors. By artificial means, by dead enrichment material, the latent and inert microbic life in this mass is incited and stimulated to a prolific growth of many thousand times beyond what actually occurs, and this is portrayed as the existing condition. Autolytic processes also take place in the media. All of this complex and decomposing material is then injected (forced) in overwhelming doses directly into the ear vein of a susceptible animal. He is killed at the proper time, for if let alone a reasonable time he will recover even from such a dose, and microorganisms are found in the different tissues. Why should they not be, when they have just been put in? You take out of the hat what you have just put in. If it were a dye that had been used it would show in the dentin. This is held up to us as a fair representation of what occurs to the rest of the human body from a blind dental abscess. Such work is highly experimental only; it may be interesting for study; it cannot be taken as a reasonable basis for practice.

The granuloma is a circumscribed sac or cicatrical tissue. New vessel formation and granulation tissue mean repair. The existence of a granuloma is supposed to be unknown until revealed by the X-ray. The inflammatory condition has passed. There exists no pain, no rise of temperature nor any local indication of disturbance. It is the result of previous inflammatory disturbance, due to chemical and mechanical trauma that has accompanied our root-canal procedure. It must be remembered that the sections of these neoplasms used for illustration purposes are from excessive and unusual cases, often in an active state. They are extremely small abscesses. The pathology of even these mean simply granulation, resolution, healing. These sacs are attached to the root ends. They are removed with extraction. They may undergo fatty degeneration as shown by fat stains and by cholestrin crystals. They frequently calcify. To choose between two examples, altho they are like neither, they are rather to be compared to a small benign tumor than to an infective area. We hear about blind abscesses, pus under pressure about the teeth, etc. Pus under pressure means swelling, pain, heat. Pus at a root end if confined establishes an opening to the surface by the route of least tissue resistance. They are, as a rule, minor and comparatively harmless things, and in no way to be regarded as the cause of grave systematic disorders. They may cause a local vascular and nervous disarrangement that may be reflected in the adjacent anatomy. Should they assume an appreciable size or give clinical signs of an active local disturbance, cure them or remove them by all means. The adjacent sound structure is never attacked. It is only about pulpless teeth that they occur. They are not distributing centers for disease. Microorganisms of this type do not wander about in the system and localize without rhyme or reason. They localize only in areas of lowered resistance.

As a part of the focal theory of infection we hear much about "points of entrance." The human body is not covered with hermetically sealed integuments. A better conception is that the tissues are filter or ultrafilter systems. No one pays any attention to points of entrance in the case of ordinary disease. One merely comes into contact or into close proximity with diseases that are of an infectious nature and the disease is

acquired. Dr. Blake, of the Rockefeller Institute, exhibited, at a recent meeting that I attended, sections showing pneumococci passing into the lung tissues. He used as small a dose as .000001 of a c. c. and by insufflation. Compare this dose with the doses of from 5 to 30 c. c. used as support for this theory. Microorganisms may enter the system thru the nasal mucosam, thru the intestines and at other points. From the standpoint of disease "points of entrance" loses much of its meaning. Points of outlet and surgical drainage are things worth while. If it were true that microorganisms found their way into the system constantly and not in overwhelming doses, nothing else than an acquired and increased immunity would occur. It is well known to surgeons that persons have carried, and for a long period, large amounts of pus in their systems, often a litter, without other seeming harm than the mechanical disarrangements of the parts.

An immense amount of work has been done upon the classification of the streptococci. Brown has given a classification which has been edited as a monograph by The Rockefeller Institute, in which he suggests their being termed as A, A', B and G, these being refinements of the usually accepted term hemolytic and non-hemolytic, the distinguishing characteristics being based upon their ability to digest blood. The non-hemolytic to which the viridans belongs do not digest blood, while the hemolytic do. The hemolytic are distinct disease producers; the cause of milk epidemics, the virulent disturbances that follow pneumonia, etc. The non-hemolytic, on the other hand, only act in areas in which the resistance has been lowered. As Kinsella puts it, "Even in the case of sub-acute bacterial endocarditis, where this type of microorganisms are constantly found in the blood stream, its appearance upon a previously injured heart valve seems purely saprophytic." The non-hemolytic are heterogenous. At one time or another streptococci have been thought to be the cause of many diseases, such as smallpox, tuberculosis, scarlet fever, whooping cough, etc., only to be proven secondary invaders.

If the authors of this theory would be willing to concede that microorganisms of this type, that in their specialty they deal with, are secondary invaders, as has been proven in all other diseases, then the involved, intricate and elaborate explanations that are used to support his ideas would be unnecessary. The question of localization would be settled. Theories that deal with special affinities could be discarded. The tissue condition would then be the governing factor. These microorganisms would be found in areas of lowered resistance. If they attain peculiar properties, they would come from the tissues of the parts in which they have actively grown. The laws of immunity would not have to be altered, as are suggested to fit the theory. Change the theory, it will fit the principles of immunity.

I believe that the streptococci are secondary invaders in the case of oral or dental diseases. I have shown that they are in the previous part of this paper. While these theorists are perfectly ready to tell about secondary and remote effects, they never explain the primary effects, or why the tonsil or tooth becomes infected in the first instance, as I have said and shown in the experiments upon pyorrhea. If streptococci of the viridans type are the cause of the dental abscesses or of pyorrhea, and either they are the cause or they are not, all that remains to be done is to inject them into these perfectly accessible parts and the disease is established. But when this is done, only spontaneous healing occurs. A child falls down and strikes his tooth a sharp blow. The pulp dies; cultured, it shows infection. It has had no exter-

nal communication. The tooth may become sore and an abscess form. What is the cause of the infection? The cause of the trouble is the blow, mechanical trauma. The infection is a secondary matter. Arsenic applied to dentine will in time kill the pulp. What is the cause of the infection? It is chemical trauma. In this connection, the experiments of Dr. Talbot are very interesting. It is only in pulpless teeth that abscesses occur. Just as these microorganisms act in primary areas so they will act elsewhere. And conditions being locally right, infective areas will be found, teeth or no teeth. The tissue condition again is the governing factor, not the microbic life.

But suppose for the moment that this theory is clear and direct and that it needs no modification and finely drawn explanation to support it. Suppose that the identity of a strain of viridans has been established beyond question, and that it is found in a blind abscess, for example, and also that without any reason whatever, except elective localization, it has wandered along without let or hindrance thru the blood stream or lymph channels and located in a joint. There it has established itself, and of course it must originally in some manner not described have come from a joint, else it would not go back to the joint, on account of its elective properties which it acquired in its first residence there, but being firmly established there it has caused much joint trouble, pain, soreness and stiffness. None of the symptoms were noticed in the blind abscess, for its existence was never suspected until revealed by the X-ray. How do you expect to relieve the joint trouble by the abscess removal? They are independent processes, are they not? The joint trouble is exactly as much a focus as the dental abscess, and may go on if this principle is correct and start as many more independent foci. So many, in short, that to attempt to eliminate them by the knife is to eliminate life.

It has been reported that clinical results support this theory. I have made an effort to find out the truth of this. I can only say that I have never yet seen a single case in which any such effect was to be seen. I have been in practice nearly thirty years. I have been in close association with large clinics and hospitals, and many others connected with both have reported that they have not been able to see that the elimination of dental areas of disturbance have brought about any such effects as have been ascribed so far as they could see. In the large clinic at the Forsyth I have never been able to detect anything that would support this theory, based upon the streptococcus viridans. In reply to a statement that I had found no arthritis deformans here, Dr. Rosenow replies that children do not have this trouble. I am not so sure of that, but they do have granulomas and blind dental abscesses by the thousand, and if they are the cause of arthritis why do they not have it? Cases of rickets and of rheumatic hearts exist here, but I have never been able to see any evidence whatever that an abscess tooth could be considered the cause of these rheumatic conditions. I have examined the urine of 200 cases. No difference exists between that of children that have had blind abscesses and those that are free from them. There are occasionally children that are mentally deficient, but the idea that the teeth cause insanity is preposterous.

We are now going thru an era of destructive dentistry. I believe in constructive dentistry. If an eye had a condition that was considered infective, would you extract it? An infected tooth can be cured, irritation can be overcome. Roots can be successfully treated. The amateur radiographist has proved to be a questionable asset to dentistry. You

cannot tell infection by the X-ray; you cannot tell pus by the X-ray; you can distinguish light and dark only.

The teeth are necessary factors in nutrition. Once lost, they can never be replaced. The first act of digestion gone, the rest must be carried out under stress by the digestive tract. Every intelligent effort should be made to save the teeth. Clear up all diseased areas of course. It may be that in certain rare cases a very extensive infection about the teeth, one such as no modern dentist would ever allow to occur in his private practice, would have a general effect upon a person who was physically below par, but such an oral condition would not be the cause of his being below par, but a sequence of it. If we consider dental diseases, such as pyorrhea, and some of the effects ascribed to it, from a nutritional and functional standpoint, we shall be nearer the real cause of our troubles, rather than if we consider these solely from an infectious point of view.

Conclusions.

The experimental evidence that supports the theory of teeth being the cause of general diseases does not represent what actually takes place in the human body.

All the effects thus produced and described may be produced in other and more natural ways and more uniformly.

The theory is not supported clinically.

The teeth are a necessary part of the body. The disturbances about the teeth are as amenable to treatment as is a similar condition in any other part of the body.

An infinite amount of harm has resulted from the acceptance of this theory, and but little good.

Clean up all diseased areas, avoid chemical, mechanical and surgical trauma. Do not regard every difference in light and dark as revealed by the X-ray a sign of disease. Many of these areas are cicatricial tissue and have already been taken care of by nature. Clinical signs are to be regarded first. Make an intelligent effort to save all teeth. Do not regard all bacteria as disease producers. Look to tissue condition as the controlling factor. Persons with no teeth have general troubles fully as much as people with teeth. More gastric ulcer is caused by the lack of teeth than thru dental diseases.

We are at present suffering from a professional neurasthenia. Every mole hill seems a mountain. We eliminate all other factors, such as normal living, a good sane diet, rest, fresh air, nervous disturbance, high tension living, and see only the infectious. Let us hope that dentistry will maintain its sense of proportion, its equilibrium, and let us take a sound, broad and comprehensive view of the problems of physiology and of disease before the present ruthless sacrifice of teeth extends further.

In my next paper I shall take up the subject that relates to the question of teeth conservation, viz: Root-canal treatment.

THE JOURNAL of the NATIONAL DENTAL ASSOCIATION

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VOL. 7 JULY, 1920 NO. 7

Editorial Department.

THE BOSTON MEETING—A SEMINAR COURSE.

The program of a dental society should be instructive. It should be so arranged that the essayist and clinicians can demonstrate their theses to the best advantage. The program by the National this year is arranged in an attempt to bring out the above features. This is the first time in the history of the National that the sections have attempted to conduct both a literary and a clinical program. The sectional clinics given each afternoon are to be, in a large degree, purely illustrative of the essays read during the morning session. The sections will occupy

the same room thruout the entire course. Therefore, during the first three days of the meeting the National will be conducted as seven complete dental societies, each one confined to some particular branch of dentistry—**a seminar.** Friday morning will be devoted to general clinics. These general clinics are to be secured from two sources.

First—The clinics that are particularly illustrative of the sections' activities during the meeting will be repeated on Friday morning.

Second—A large number of clinics that do not fit directly into the sections' work will be given.

This plan of organization will give a member the opportunity during the first three days to concentrate his attention on the particular line of dentistry in which he is most interested. In the general clinic on Friday he may learn what has been considered in the other sections and what is being done in the general field of dentistry.

Among the general clinics presented on Friday morning there will be offered both unit and individual clinics of great merit. The finest clinics ever shown at a National meeting are promised for this meeting. The most advanced technic in every line, the newest devices, and the most expert manipulation afforded in the profession will be demonstrated. The size and arrangement of Mechanics Hall where the meeting will be held is such that these clinics will be accessible to large numbers of men during the morning.

The officers of the National realize that this first attempt may have some faults in execution, but the plan at least seems to lend itself to fulfilling the two aims outlined above.

The Boston meeting will stand out in the history of the National Dental Association as having established a new epoch in program building and execution—a real **seminar course.**

VACATION DAYS—BOSTON MEETING.

The fishing days are here, and after the long and disagreeable winter, with the strenuous work that has been the lot of most dentists, a day off with a rod and a search for the gamey bass will prove restful and enjoyable for most any practitioner. Recreation, like most anything else, may come high, but we must have it.

The East, and particularly New England, is an ideal section of the States for fishing, golfing and historical sight-seeing. Why not plan your vacation to include the Boston meeting, August 23-27, 1920?

REPUBLICAN PLATFORM AND HEALTH AND EDUCATION.

In the General News column (page 1724 this issue) appears the full text of the plank on education and health adopted last week by the Republican convention. The association of these two subjects in a single section is significant of the increasing realization of the close relation and mutual interdependence of health and education. Good health either of the individual or of the community is largely a matter of education. All true education results in better health. In the joint development of these closely allied activities there is room and need for the specialist and expert in both fields. Possibly most of our readers will be especially interested in the paragraph that points out that the health activities of the federal government are scattered thru numerous departments and bureaus, resulting in inefficiency, duplication and extravagance. It very wisely limits its recommendations to greater centralization of federal functions and better coordination of federal, state and local agencies, without attempting to discuss the exact method by which this result is to be secured. The reorganization and extension of federal public health work has been under discussion for half a century. While all agreed as to the desirability of such expansion, there is no unanimity as to the exact method by which it should be accomplished or the form it should take. These questions can be answered only after careful study of existing conditions in order to determine what the federal government is now doing for public health, how much is being expended and what is being accomplished, what are the public health functions which belong to the federal government, what are those which belong to the state, and how coordination can be best effected. These are not questions for either partisan or sectarian controversy but rather for patient study and constructive planning. Whatever may be our differences of opinion as to the peace treaty with Germany, the League of Nations or the high cost of living, all good citizens are agreed as to the importance of both education and health. It is to be hoped that the Democratic convention at San Francisco will make an equally broad and constructive declaration on these two subjects.—*Editorial Journal American Medical Association, June 19, 1920.*

THE MINISTER OF EDUCATION AND PUBLIC HEALTH.

The offices of Minister for Education and Minister for Public Health have now been centered under a common head instead of being under dual control as heretofore. We think the change should prove productive of most happy results.

The progress of the child from an educative standpoint is so exactly correlated to its purely physical condition that the two may be regarded as almost complementary to one another. So intimately interwoven, indeed, are the interests of both departments that it is difficult to understand the wisdom which has disassociated them so long. Nowhere is this relationship more clearly manifest than when we come to consider the question of dental disease so appallingly prevalent among our school children, and this, whether we view the question from either its individual or its national aspect.

The campaign against disease has been hindered because of divided authority. What has been two men's business has been no man's business, and vital issues have been sometimes suffered in this game of political shuttlecock.

The Hon. C. J. Parr, who has assumed command of both portfolios, comes

before us with a ripe experience in educational and civic matters. As Chairman of the Auckland Education Board he had exceptional opportunities to mark the working of our public school system and to note its defects.

School medical and dental inspection but emphasized a state of affairs long recognized as existing by the teachers themselves. We have in the past dwelt too much on school education and too little on school hygiene. So glaringly apparent and so universal have been the physical disabilities under which our children have laboured, that one is tempted to ask whether Ministerial timidity to embark on so prodigious a task has not alone been responsible for the delay in finding the remedy.

We are assured that in the new Minister we have one who will always turn a sympathetic ear to any scheme devised for the amelioration of the ills under which the children in our public schools suffer, and we anticipate very definite results will accrue from his appointment. In his crusade against existing evils, be the cost what it may, he will have the moral and tangible support not only of every educationist, but of the entire medical and dental professions as well.—*Editorial The New Zealand Dental Journal, May, 1920.*

DENTAL CORPS ORDERS FROM WAR DEPARTMENT.

First Lieut. Richard S. Payne to Edgewood Arsenal, Md., for duty.

—***Army and Navy Register, April 17.***

First Lieuts. Albin P. Dansereau and Karl E. Osborn honorably discharged.

Col. George L. Mason to Camp Dix, N. J., for duty.

Col. Frank H. Wolven report to retiring board at Washington for examination.

Maj. Lee S. Fountain and Capt. James B. Mann to Walter Reed General Hospital, D. C., for duty.

Capt. Roy R. Newman report by wire to commanding general, Central Department, for assignment.

Capt. Arthur T. Burchill report by wire to commanding general, Southeastern Department, for assignment.

Capt. Ralph O. Leonard honorably discharged.

1s. Lieut. Wm. E. Sankey to Camp Pike, Ark., for duty.

1st Lieut. Harold S. Whitney to Fox Hills, N. Y., General Hospital 41 for duty.

—***Army and Navy Register, April 24.***

Col. Frank H. Wolven report to retiring board, Washington, for examination.

Maj. William S. Rice to Chicago and report to commanding general Central Department for duty.

Maj. Frederick R. Wunderlich to Camp Zachary Taylor, Ky., for duty.

Maj. Thomas C. Daniels to Presidio, of San Francisco, for duty.

Capt. Hooker O. Lindsey to attending surgeon's office, Washington, for duty.

Capt. Edwin M. Kennedy to Fort Logan, Colo., for duty.

First Lieut. Melville A. Sanderson to Fort Andrew, Mass., for duty.

First Lieut. Edward L. Dillon, honorable discharged.

—***Army and Navy Register, May 1.***

Maj. William Mann to San Francisco and about June 5 to Hawaiian Department for duty.

Capt. Adrian C. Ragan to San Francisco and about June 5 to Hawaiian Department for duty.

Capt. William J. Eggleston, First Lieuts. Leon A. Jones, James S. Dailey and Albert W. Harrison honorably discharged.

—***Army and Navy Register, May 8.***

Capt. Joseph P. Collins to Letterman General Hospital, San Francisco, for duty.

First Lieut. Henry A. Winslow to Fort Slocum, N. Y., for duty.

First Lieut. Campbell H. Glascock to Jefferson Barracks, Mo., for duty.

First Lieut. Clarence W. Johnson report by telegram to commanding general Southern Department for assignment to duty and station.

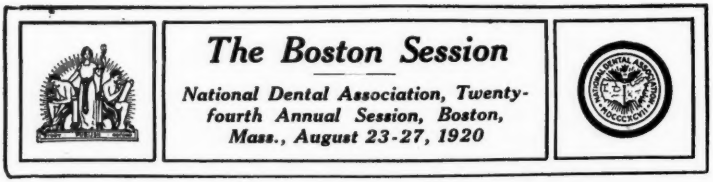
First Lieuts. Joseph H. Hickey, Harvey H. Crosby, Vernon E. Lane, Joseph S. Matson, Frank R. Keller, honorably discharged.

—***Army and Navy Register, May 15.***

Lieut. Col. Archibald L. Miller to Camp Meade, Md., for duty.

First Lieut. Oscar R. Reed to Fort Sam Houston, Tex., for assignment to duty.

—***Army and Navy Register, May 22.***



NATIONAL DENTAL ASSOCIATION TWENTY-FOURTH ANNUAL MEETING, BOSTON, AUGUST 23-27, 1920.

OFFICIAL CALL.

To the Officers and Members of the National Dental Association:

The twenty-fourth annual meeting of the National Dental Association will be held at Boston, August 23-27, 1920.

The House of Delegates will convene at 10:30 A. M. and 2:00 P. M., Monday, August 23, in the Mechanics Building. Subsequent meetings will be announced in the program.

In the *House the representation of the various constituent societies for 1920 is as follows:**

Alabama	128
Alaska	12
Arizona	31
Arkansas	131
Army Dental Corps	42
California State	668
Colorado	319
Connecticut	380
Delaware	
District of Columbia	176
Florida	135
Georgia	346
Hawaiian Islands	21
Idaho	117
Illinois	2499
Indiana	769
Iowa	973
Kansas	468
Kentucky	241
Louisiana	240
Maine	106
Maryland	215
Massachusetts	1048
Michigan	919
Minnesota	1129
Mississippi	216
Missouri	1046

*"Sec. 2.—The total voting membership in the House of Delegates, exclusive of the Board of Trustees, shall be as follows: One delegate shall be allowed from each Scientific Section, from the Army Dental Corps, from the Navy Dental Corps, and one from each Constituent Society. Each Constituent Society shall be entitled to one additional delegate if one hundred of its members become regularly enrolled as members of the National Dental Association; and one more delegate for each additional two hundred members enrolled.

Explanatory.—Regardless of enrollment in the National Dental Association each Constituent Society would have one delegate.

With 100 members in the National, two delegates.

With 300 members in the National, three delegates.

With 500 members in the National, four delegates.

With 700 members in the National, five delegates.

With 900 members in the National, six delegates.

With 1100 members in the National, seven delegates.

With 1300 members in the National, eight delegates.

With 1500 members in the National, nine delegates."—Constitution and By-laws, Article V, Sec. 2.

**This roll will be officially revised July 22, 1920.

Montana	71
National Capital	46
Navy Dental Corps	22
Nebraska	426
Nevada	12
New Hampshire	57
New Jersey	649
New Mexico	47
New York	1948
North Carolina	269
North Dakota	191
Ohio	1455
Oklahoma	356
Oregon	159
Pennsylvania	1653
Philippine Islands	
Porto Rico	36
Rhode Island	146
Southern California	406
South Carolina	90
South Dakota	212
Tennessee	247
Texas	547
***Trustees	
Utah	113
Vermont	90
Virginia	200
Washington	499
West Virginia	236
Wisconsin	874
Wyoming	22

***"The Trustees shall be members of the House of Delegates, without the right to vote."—Constitution and By-laws, Article V, Section 1.

The scientific sections of the National Dental Association, the Dental Corps of the Army, the Dental Corps of the Navy, are entitled to one delegate each.

The general meeting, which constitutes the opening exercises of the Association, will be held Tuesday evening, August 24, at 8:00 P. M., Paul Revere Hall, Mechanics Building. The various sections of the National Dental Association will meet Tuesday, August 24, at 9:00 A. M., and subsequently according to their respective programs.

The Registration Department will be open from 8:30 A. M. until 5:00 P. M. on Monday, Tuesday, Wednesday and Thursday, August 23, 24, 25 and 26, and from 8:30 A. M. to 10:00 A. M. on Friday, August 27.

The Registration Office will be in the Mechanics Building, entrance hall.

JOHN V. CONZETT, President.
OTTO U. KING, General Secretary.

MEMBERS OF THE HOUSE OF DELEGATES—1920.

A Preliminary Roster of the Legislative Body of the National Dental Association.

DELEGATES AND ALTERNATES.

The list of members of the House of Delegates for the session is incomplete, as a few of the state societies are yet to hold their meetings at which delegates will be elected.

There will be two meetings of the House of Delegates on Monday, August 23. The subsequent meetings will be announced in the official Program.

ALABAMA.

Delegates.

C. F. Chandler, 1st Nat'l Bank Bldg., Montgomery.

Chas. A. Dillard, Huntsville.

Alternates.

J. A. Blue, Empire Bldg., Birmingham.

F. E. Webb, Piedmont.

ALASKA.

Delegates.

Alternates.

ARIZONA.

Delegates.

J. Harvey Blain, Prescott.

H. H. Braxton, O'Neil Bldg., Phoenix.

Alternates.

W. P. Sims, Allen Block, Bisbee.

John A. Lentz, First Avenue & Adams, Phoenix.

ARKANSAS.

Delegates.

J. D. Jordan, 510 Boyle Bldg., Little Rock.

F. P. Travis, Osceola.

Alternates.

James Allen, 501 Main St., Little Rock.

J. D. Lord, 501 Main St., Little Rock.

ARMY DENTAL CORPS.

Delegates.

Col. R. T. Oliver, Dental Division, Surgeon General's Office, Washington, D. C.

Col. S. D. Boak, Chief of Dental Service, Walter Reed Hospital, Takoma Park, D. C.

Alternates.

Lt. Col. R. H. Mills, Dept. Dental Surgeon, Headquarters Northwestern Dept., Boston, Mass.

Major W. A. Squires, Chief of Dental Service, Camp Dix, N. J.

CALIFORNIA STATE.

Delegates.

D. H. Leppo, Union Trust Savings Bank Bldg., Santa Rosa.

R. J. Blauer, Garden City Bank Bldg., San Jose.

F. C. Pague, Head Bldg., San Francisco.

A. W. Ward, 209 Post St., San Francisco.

Hugh Avary, Head Bldg., San Francisco.

Alternates.

SOUTHERN CALIFORNIA.

Delegates.

B. B. McCollum, 612 Baker-Detwiler Bldg., Los Angeles.

F. L. Warren, 804 Investment Bldg., Los Angeles.

Geo. M. Hollenback, 811 Merritt Bldg., Los Angeles.

Frank B. Damron, 608 First National Bank Building, Long Beach.

Alternates.

L. E. Ford, 704 Investment Bldg., Los Angeles.

W. H. Spinks, 910 Security Bldg., Los Angeles.

G. C. Sharp, 718 Citizens Bank Bldg., Pasadena.

Arthur B. Allen, 445 Chambers Bldg., Pasadena.

COLORADO.

Delegates.

George R. Warner, Cannon Block, Grand Junction.

W. T. Chambers, 719 Metropolitan Bldg., Denver.

J. T. Williams, Sr., 736 Metropolitan Bldg., Denver.

Alternates.

Glenn A. Willgus, 218-20 Cornado Bldg., Denver.

V. C. Smedley, 604 California Bldg., Denver.

E. E. Bailey, 316 Metropolitan Bldg., Denver.

CONNECTICUT.

Delegates.

Frank J. Buchanan, 111 West Main St., Waterbury.

Blake A. Sears, 193 Edgewood St., Hartford.

Albert W. Crosby, 59 College St., New Haven.

Alternates.

Elwyn R. Bryant, 972 Chapel St., New Haven.

Ralph H. Keeler, 140 State St., Manwaring Bldg., New London.

Frank J. Erbe, 111 West Main St., Waterbury.

DELAWARE.

Delegates.

Alternates.

DISTRICT OF COLUMBIA.

Delegates.

A. D. Weakley, 1339 K St., N. W., Washington, D. C.

Thos. J. Rice, 921 Fifteenth St., N. W., Washington, D. C.

Alternates.

Mark F. Finley, 1928 I St., N. W., Washington, D. C.

Carl J. Mess, 921 Fifteenth St., N. W., Washington, D. C.

FLORIDA.

Delegates.

Alternates.

GEORGIA.

Delegates.

DeLos L. Hill, Atlanta.

A. A. Williams, Columbus.

N. G. Slaughter, Athens.

Alternates.

S. H. McKee, Americus.

G. M. Woodbury, Augusta.

Robt. F. Sullivan, Savannah.

HAWAIIAN ISLANDS.

Delegate.

Clifford Braly, Campbell Bldg., Honolulu.

Alternate.

IDAHO.

Delegates.

A. W. Cate, 417 Empire Bldg., Boise.

R. J. Cruse, Pocatello.

Alternates.

H. C. Coleman, Buhl.

B. H. Hudson, Blackfoot.

ILLINOIS.

Delegates.

J. P. Luthringer, 507 Jefferson Bldg., Peoria.

Frederick B. Noyes, 1428 Peoples Gas Bldg., Chicago.

Arthur G. Smith, Central National Bank Bldg., Peoria.

G. Walter Dittmar, 59 E. Madison St., Chicago.

W. B. Young, Jacksonville.

Arthur D. Black, 122 S. Michigan Ave., Chicago.
T. A. Broadbent, 25 E. Washington St., Chicago.
Wm. H. G. Logan, 29 E. Madison St., Chicago.
Thos. L. Grisamore, 29 E. Madison St., Chicago.
M. M. Printz, 25 E. Washington St., Chicago.
Don M. Gallie, 32 N. State St., Chicago.

Alternates.

L. W. Strong, 30 N. Michigan Ave., Chicago.
W. A. McKee, Benton.
W. T. Reeves, 159 N. State St., Chicago.
R. E. Blackwell, 801 Simpson St., Evanston.
L. L. Davis, 81 E. Madison St., Chicago.
Percy B. D. Idler, 30 N. Michigan Ave., Chicago.
C. W. Coltrin, 208 N. Mason Ave., Chicago.
A. B. Patterson, Woodruff Bldg., Joliet.
E. F. Hazell, 608 E. Capital Ave., Springfield.
Victor H. Fuqua, 25 E. Washington St., Chicago.
P. G. Stordock, 539 Second Ave., Ottawa.

INDIANA.

Delegates.

C. E. Redmon, Peru.
R. F. Lucas, South Bend.
C. A. Nixon, Valparaiso.
F. R. Henshaw, 507-8 Pythian Bldg., Indianapolis.
C. R. Jackson, 907 Hume-Mansur Bldg., Indianapolis.

Alternates.

J. A. Stoeckley, Studebaker Bldg., South Bend.
N. W. Van Osdol, 701 Hume-Mansur Bldg., Indianapolis.
O. A. Van Kirk, Kendallville.
L. E. Trinkle, Terre Haute.
M. E. Le Galley, Lafayette.

IOWA.

Delegates.

R. H. Volland, Iowa City.
William Finn, Cedar Rapids.
Earl S. Smith, Iowa City.
J. G. Hildebrand, Waterloo.
C. M. Kennedy, 605 Citizens State Bank, Des Moines.
C. N. Booth, Cedar Rapids.

Alternates.

C. E. Woodbury, Council Bluffs.
C. V. Watts, Des Moines.
J. W. Marsh, Keokuk.
C. R. Baker, Davenport.
J. A. Hallett, Des Moines.
C. M. Work, Ottumwa.

KANSAS.

Delegates.

G. A. Crise, Manhattan.
F. A. Koester, Mills Bldg., Topeka.
C. B. Reed, Mills Bldg., Topeka.

Alternates.

J. F. Kernan, Sweiter Bldg., Wichita.
H. M. McFarland, Kansas City, Kansas.
C. A. Martin, Winfield, Kansas.

KENTUCKY.

Delegates.

H. B. Tileston, Starkes Bldg., Louisville.
W. G. Best, Berea.
T. W. Lander, Eddyville.

Alternates.

E. C. Hume, Atherton Bldg., Louisville.
E. Cronly Elliott, Lexington.
E. D. Rose, Bowling Green.

LOUISIANA.

Delegates.

Leo C. Dempsey, 943 Jackson Ave., New Orleans.
F. J. Oser, 704 Macheca Bldg., New Orleans.

Alternates.

Wallace Wood, Jr., 416 Macheca Bldg., New Orleans.
C. Victor Vignes, 709 Macheca Bldg., New Orleans.

MAINE.

Delegates.

Alternates.

MARYLAND.

Delegates.

H. E. Kelsey, 817 Park Ave., Baltimore.
F. F. Drew, 701 N. Howard St., Baltimore.

Alternates.

J. E. Orrison, Professional Bldg., Baltimore.
J. Ben Robinson, 113 N. Charles St., Baltimore.

MASSACHUSETTS.

Delegates.

Geo. C. Ainsworth, 45 Bay St., Rd., Boston.
Amos I. Hadley, 125 Marlboro St., Boston.
Frank P. Barnard, 507 Main St., Worcester.
C. Wesley Hale, 400 St. James Ave., Springfield.
Frank T. Hassett, 321 Main St., Great Barrington.
William J. Speers, 78 Bedford St., Fall River.
Chas. T. McMurray, 2 Pritchard St., Fitchburg.

Alternates.

Walter A. Davis, 283 Dartmouth St., Boston.
Hugh K. Hatfield, 129 Marlboro St., Boston.
Frank H. Dean, 311 Main St., Worcester.
Paul Manning, 387 Main St., Springfield.
Esmond R. Sullivan, Kimball Blk., North Adams.
Byron H. Strout, 110 Weir St., Taunton.
Merton H. Greene, 37 Union St., Gardner.

MICHIGAN.

Delegates.

Marcus L. Ward, Ann Arbor.
Wm. H. Elliott, 1539 Jefferson Ave., Detroit.
W. A. Giffen, 609 Washington Arcade, Detroit.
Chalmers J. Lyons, Ann Arbor.
Thomas Davidson Dow, Stanton.

Alternates.

Chas. Lane, 1526 Woodward Ave., Detroit.
W. N. Miller, Flint.
Edw. J. Chamberlin, 526 Ashton Bldg., Grand Rapids.
C. G. Bailey, Lansing.
P. C. Lowery, 1957 Gratiot Ave., Detroit.

MINNESOTA.

Delegates.

K. Edward Carlson, 517 Lowry Bldg., St. Paul.
George O. Orr, 649 Lowry Bldg., St. Paul.
Benj. A. Sandy, 636 Syndicate Bldg., Minneapolis.
T. W. Maves, 505 Donaldson Bldg., Minneapolis.
H. B. Washburn, 2395½ University Ave., St. Paul.
Forrest H. Orton, 921 Lowry Bldg., St. Paul.
Verner H. Nilsson, 306 La Salle Bldg., Minneapolis.

Alternates.

James M. Walls, 828 Lowry Bldg., St. Paul.
W. H. MacNeil, 512 Physicians and Surgeons Bldg., Minneapolis.
George M. Damon, 730 LaSalle Bldg., Minneapolis.
H. A. Maves, 500 Donaldson Bldg., Minneapolis.
C. H. Turnquist, 338 LaSalle Bldg., Minneapolis.
Elmer S. Best, 933 Metropolitan Bank Bldg., Minneapolis.
Philip R. Thomas, 826 LaSalle Bldg., Minneapolis, Minn.

MISSISSIPPI.

Delegates.

Rush P. Abbott, West Point.
W. R. Wright, Jackson.

Alternates.

W. F. Beavers, Meridian.
N. T. Day, Clarksdale.

MISSOURI.

Delegates.

J. P. Harper, Grand & Caroline Sts., St. Louis.
J. H. Kennerly, 29th & Locust Sts., St. Louis.
R. J. Rinehart, 409 Bryant Bldg., Kansas City.
G. E. Haigh, Jefferson City.
D. D. Campbell, Shukert Bldg., Kansas City.

Alternates.

W. M. Carter, Sedalia.
H. G. Tanzey, Commerce Bldg., Kansas City.
W. R. Anderson, Holland Bldg., Springfield.
W. A. Roddy, Frisco Bldg., St. Louis.
J. D. White, University Club Bldg., St. Louis.

MONTANA.

Delegates.

Frank J. Bell, Billings.
G. J. Packard, Livingston.

Alternates.

T. M. Hampton, Helena.
B. J. Keenan, 518 Phoenix, Butte.

NATIONAL CAPITOL.

Delegate.

Emory A. Bryant, The Rochambeau, Washington, D. C.

Alternate.

Charles W. Cuthbertson, 603 R. E. T. Bldg., Washington, D. C.

NAVY DENTAL CORPS.

Delegates.

Alternates.

NEBRASKA.

Delegates.

M. E. Vance, 407-9 Ganter Bldg., Lincoln.
G. A. Grubb, Ganter Bldg., Lincoln.
H. E. King, Bee Bldg., Omaha.

Alternates.

W. Clyde Davis, Lincoln.
E. A. Litchfield, Humboldt.
C. E. Brown, 620 Terminal Bldg., Lincoln.

NEVADA.

Delegates.

John V. Ducey, Registration Bldg., Goldfield.
G. C. Steinmiller, Masonic Bldg., Reno.

Alternates.

W. H. Cavell, 11 State Bank & Trust Bldg., Carson City.
H. McNeil, Nixon Bldg., Reno.

NEW HAMPSHIRE.

Delegate.

A. J. Sawyer, Elm St., Manchester.

Alternate.

G. A. Bowers, Nashua.

NEW JERSEY.

Delegates.

C. F. Alfred Hane, 176 Carteret Ave., Jersey City.
Fred H. Lum, Jr., Fairmount Ave., Chatham.
Raymonde Albray, 340 Belmont Ave., Newark.
Matthew C. Pearce, 226 Main St., Orange.
George W. Wakeley, 414 Main St., Orange.

Alternates.

NEW MEXICO.

Delegates.

M. J. Moran, Deming.
J. J. Clark, Artesia.

Alternates.

C. A. Eller, Albuquerque.
C. O. Harrison, Santa Fe.

NEW YORK.

Delegates.

Arthur H. Merritt, 59 W. 46th St., New York City.
A. H. Stevenson, 576 Fifth Ave., New York City.
J. W. Canaday, 283 State St., Albany.
A. C. Rich, 96 Lake St., Saratoga Springs.
A. C. Bickelhaupt, 415 Kirk Bldg., Syracuse.
C. F. Baylis, Oneonta.
W. W. Smith, 83 East Ave., Rochester.
Louis Meisburger, 85 No. Pearl St., Buffalo.
D. W. McLean, Mt. Vernon.
Ellison Hillyer, 1143 Dean St., Brooklyn.
G. B. Beach, 518 S. A. & K. Bldg., Syracuse.

Alternates.

Paul R. Stillman, 52 Vanderbilt Ave., New York City.
Thaddeus P. Hyatt, 576 Fifth Ave., New York City.
A. M. Wright, 4 St. Paul Place, Troy.
L. A. Timmerman, Canal, Fort Plain.
A. C. Hitzelberger, Utica.
A. P. Burkhart, 52 Genessee St., Auburn.
D. H. Squire, 37 Allen St., Buffalo.
W. E. Fancher, Yonkers.

H. P. Gould, 181 Joralemon St., Brooklyn.
J. W. Beach, 131 Allen St., Buffalo.

NORTH CAROLINA.

Delegates.

F. L. Hunt, Asheville.
J. N. Johnson, Goldsboro.

Alternates.

J. H. Wheeler, Greensboro.
J. S. Spurgeon, Hillsboro.

NORTH DAKOTA.

Delegates.

Ira G. Nichols, Mandan, N. D.
Tom Smith, Langdon.

Alternates.

Albert Hallenberg, Fargo.
L. B. McLain, Jamestown.

OHIO.

Delegates.

Homer C. Brown, 605 Hartman Bldg., Columbus.
J. F. Stephan, 1124 Guardian Bldg., Cleveland.
E. C. Mills, 151 E. Broad St., Columbus.
F. M. Casto, 458 Rose Bldg., Cleveland.
C. W. Mills, Chillicothe.
T. Irving Way, 52 Groton Bldg., Cincinnati.
Weston A. Price, 8803 Euclid Ave., Cleveland.
Harry Cope, 328 E. State St., Columbus.

Alternates.

W. H. Hayden, 228 Lincoln Ave., Youngstown.
G. D. Edgar, Defiance.
Z. N. Wright, 730 Fidelity Bldg., Dayton.
E. S. Braithwaite, Willard.
J. K. Douglas, Sandusky.
J. J. Welker, 1143 Onio Bldg., Toledo.
F. M. Pursell, Tippecanoe City.
C. H. Schott, 1004 Neave Bldg., Cincinnati.

OKLAHOMA.

Delegates.

C. R. Lawrence, 212 Stephenson Bldg., Enid.
J. Q. Waddell, Kingfisher.
A. E. Bonnell, 402 Surety Bldg., Muskogee.

Alternates.

OREGON.

Delegates.

Herbert C. Miller, North Pacific Dental College, Portland.
Claude W. Adams, 1208 Selling Bldg., Portland.

Alternates.

J. C. Jones, 811 Broadway Bldg., Portland.
C. H. Wolrath, Secrean Court, Portland.

PENNSYLVANIA.

Delegates.

R. H. D. Swing, 1623 Walnut St., Philadelphia.
George S. Schlegel, 147 N. Eighth St., Reading.
Alexander H. Reynolds, 4630 Chester Ave., Philadelphia.
J. D. Whiteman, Mercer.
W. L. Fickes, East End Trust Bldg., Pittsburgh.
William H. Lowell, 18 East Orange St., Lancaster.
J. F. Biddle, 517 Arch St., Pittsburgh.
Alfred P. Lee, 1616 Locust St., Philadelphia.
G. H. Smock, 1208 Palace Bldg., Erie.
Frederick W. Allen, 911 Flanders Bldg., Philadelphia.
P. V. McParland, 706 Highland Bldg., Pittsburgh.

Alternates.

H. W. Bohn, 34 N. Ninth St., Reading.
Thomas A. Hogan, Jenkins Arcade, Pittsburgh.
Bruce P. Rial, 4524 Fifth Ave., Pittsburgh.
W. D. DeLong, 141 N. Fifth St., Reading.
William A. McCready, Highland Bldg., Pittsburgh.
W. J. Robinson, 1240 N. 53rd St., Philadelphia.
O. J. Specker, 143 N. Eighth St., Reading.
M. F. Quinn, 1222 N. Eighteenth St., Philadelphia.
A. J. Heffernan, 71 S. Main St., Wilkes-Barre.
A. D. Miller, 299 Wyoming Ave., Kingston.
Leslie Waddill, Jenkins Arcade, Pittsburgh.

PHILIPPINE ISLANDS.

Delegates.

Alternates.

PORTO RICO.

Delegates.

Alternates.

RHODE ISLAND.

Delegates.

Ernest A. Charbonnel, 334 Westminster St., Providence.
Albert L. Midgley, 315 Butler Exchange, Providence.

Alternates.

James Clark, 161 Main St., Pawtucket.
Ira B. Stilson, 234 Thayer St., Providence.

SOUTH CAROLINA.

Delegates.

W. K. Walker, Orangeburg.
H. J. Ray, Aiken.

Alternates.

L. P. Dotterer, Charleston.
P. D. Brooker, Columbia.

SOUTH DAKOTA.

Delegates.

A. O. Stutenroth, Watertown.
G. O. Goodman, Milbank.

Alternates.

L. S. Spencer, Watertown.
M. Watson, Watertown.

TENNESSEE.

Delegates.

R. Boyd Bogle, Hitchcock Bldg., Nashville.
J. W. Winn, 217½ Seventh Ave., Nashville.

Alternates.

F. W. Meacham, Hamilton Nat'l. Bank Bldg., Chattanooga.
J. L. Austin, Trenton.

TEXAS.

Delegates.

W. H. Scherer, Scanlan Bldg., Houston.
J. O. Hall, Amicable Bldg., Waco.
B. F. Dulaney, Colorado.

Alternates.

T. F. Cox, 515 Scarborough Bldg., Austin.
Jno. E. Storey, Beaumont.
G. W. Wiebusch, Brenham.

TRUSTEES.

Waldo E. Boardman, 419 Boylston St., Boston, Mass.
Clarence J. Grieves, Park and Madison Sts., Baltimore, Md.
Carl D. Lucas, 902 Hume Mansur Bldg., Indianapolis, Ind.
Thomas B. Hartzell, 716 Donaldson Bldg., Minneapolis, Minn.
C. L. White, Colcord Bldg., Oklahoma City, Okla.
John D. Millikin, Elkan-Gunst Bldg., San Francisco, Cal.
J. P. Buckley, 1550 Hayworth Bldg., Los Angeles, Cal.
Thomas P. Hinman, Fourth National Bank Bldg., Atlanta, Ga.
H. J. Burkhart, Rochester Dental Dispensary, Rochester, N. Y.

UTAH.

Delegates.

Victor Sears, Salt Lake City.
W. A. Squires, Felt Bldg., Salt Lake City.

Alternates.

J. H. Grant, 1004 Des. Bk. Bldg., Salt Lake City.
Robt. W. Hall, 620 Kearns Bldg., Salt Lake City.

VERMONT.

Delegate.

P. M. Williams, Rutland.

Alternate.

A. L. Pettee, Brattleboro.

VIRGINIA.

Delegates.

J. A. C. Hoggan, 114 Professional Bldg., Richmond.
Harry Bear, 410 Professional Bldg., Richmond.

Alternates.

W. G. Delp, Rural Retreat.
W. E. Miller, Monroe Bldg., Norfolk.

WASHINGTON.

Delegates.

Alternates.

WEST VIRGINIA.

Delegates.

I. J. Kail, Huntington.
J. N. Mahan, Charleston.
George C. Howard, West Union.

Alternates.

Homer Mannon, Huntington.
A. I. Marple, Huntington.
W. J. Boydson, Fairmont.

WISCONSIN.

Delegates.

Wm. H. Cudworth, 128 Wisconsin St., Milwaukee.
J. J. Wright, 1218 Wells Bldg., Milwaukee.
Adolph Gropper, 616 Goldsmith Bldg., Milwaukee.
A. G. Fee, Superior, Wis.
T. A. Hardgrove, Fon du Lac.

Alternates.

P. W. Rood, 413 Grand Ave., Milwaukee.
M. L. Christensen, Oshkosh.
W. J. Mac Farlane, Tomahawk.
V. I. Buss, Rio.
E. A. Geilfuss, 809 Goldsmith Bldg., Milwaukee.

WYOMING.

Delegate.

W. A. Andrew, 322 Citizens National Bank Bldg., Cheyenne.

Alternate.

Peter Appel, Jr., Hynds Bldg., Cheyenne.

SECTIONS.

Operative Dentistry, Materia Medica and Therapeutics.

Delegate.

Thos. J. Barrett, 518 Main St., Worchester, Mass.

Alternate.

Prosthetic Dentistry and Crown and Bridge Work.

Delegate.

Alternate.

Oral Surgery and Anesthesia.

Delegate.

Arthur E. Smith, 210 South Lincoln St., Chicago, Ill.

Alternate.

Mark E. Vance, 407-9 Ganter Bldg., Lincoln, Nebr.

Orthodontia and Periodontia.

Delegate.

George A. Sprinkle, Richmond, Va.

Alternate.

Percy R. Howe, 10 Exeter, Boston, Mass.

Organization, Mouth Hygiene aand Public Service.

Delegate.

George F. Burke, 741 David Whitney Bldg., Detroit, Mich.

Alternate.

C. W. Day, Attica, Indiana.

Histology, Physiology, Pathology, Bacteriology and Chemistry Research.

Delegate.

Frank O. Hetrick, Ottawa, Kansas.

Alternate.

John D. Jordan, Little Rock, Ark.

PRELIMINARY PROGRAM OF THE SCIENTIFIC SESSIONS.

TUESDAY MORNING.

9:00 A. M. to 11:30 A. M.

Operative Dentistry, Materia Medica and Therapeutics.

(Talbot Hall, Second Floor, Mechanics Building.)

OFFICERS OF SECTION.

Arthur D. Black, Chairman.....Chicago, Ill.
122 So. Michigan Ave.

Harold S. Smith, Vice-Chairman.....Chicago, Ill.
1010 Belmont Ave.

G. A. Milner, Secretary.....Aiken, S. C.

It is the aim of this section to present six subjects in the most thoro manner by papers and unit clinics. Two papers will be read each morning and the unit clinic demonstrations of the afternoon will be under the direction of the essayists of the morning and definitely coordinated with the papers. In other words, the clinics will exemplify by demonstration the technical points presented in the papers. The following is the list of titles and the names of the essayists:

"Cavity Preparation and New Points in the Technic of Placing Gold Foil Fillings."
By C. W. Farrington....Boston, Mass.

"Report of Studies and the Technic for Gold Inlays."
By R. E. Blackwell.....Chicago, Ill.

TUESDAY MORNING.

9:00 A. M. to 11:30 A. M.

Prosthetic Dentistry and Crown and Bridge Work.

Part I—Denture Section,

(Paul Revere Banquet Hall, Second Floor, Mechanics Building.)

Part II—Crown and Bridge Section,

(Reception Room, Paul Revere Hall, Second Floor, Mechanics Building.)

OFFICERS OF SECTION.

M. M. House, Chairman.....Indianapolis, Ind.
1005 Hume-Mansur Bldg.

Norman B. Nesbett, Vice-Chairman..Boston, Mass.
125 Marlborough St.

E. F. Tinker, Secretary.....Minneapolis, Minn.
307 Donaldson Bldg.

Part I—Denture Section.

(Paul Revere Banquet Hall, Second Floor, Mechanics Building.)

"Surgical Preparation of the Mouth for Early Denture Restoration."
By Carl D. Lucas....Indianapolis, Ind.

"Some Fundamental Things in the Aesthetics of Dental Prosthesis."
By J. Leon Williams..New York City.

"Cast Full Upper Denture with Special Attention Given to Anatomical Form and Physiological Function of the Soft Tissues."
By Claude J. Stansbery.....
.....Seattle, Wash.

Part II—Crown and Bridge Section.

(Reception Room, Paul Revere Hall, Second Floor, Mechanics Building.)

"Crown and Bridge-work From a New Point of View."
By Forrest H. Orton....St. Paul, Minn.

"Color and Characteristics of the Teeth."
By William D. Vehe.....
.....Minneapolis, Minn.

"Modern Technic of Crown and Bridge-work, Dwelling Especially on Prophylactic Principles."
By William H. Elliott....Detroit, Mich.

TUESDAY MORNING.

9:00 A. M. to 11:30 A. M.

Oral Surgery, Exodontia and Anesthesia.

(Lightwell Hall, Second Floor, Mechanics Building.)

OFFICERS OF SECTION.

Chalmers J. Lyons, Chairman...Ann Arbor, Mich.

John W. Seybold, Vice-Chairman....Denver, Colo.
304 Mack Bldg.

Wm. L. Shearer, Secretary.....Omaha, Nebr.
City Nat'l Bank Bldg.

Local Anesthesia.

"Some Considerations of the Anatomy Involved in Conductive Anesthesia."
By W. A. Cook.....Detroit, Mich.

"Further Advances in Local Anesthesia."
By S. L. Silverman.....Atlanta, Ga.

"Action of Hypotonic, Isotonic and Hypertonic Solutions on Blood and Tissue Cells of Living Animals."
By Ira G. Nichols.....Mandan, N. D.

"Untoward Sequella Following in the Wake of Conductive Anesthesia."
By Herbert A. Potts.....Chicago, Ill.

TUESDAY MORNING.

9:00 A. M. to 11:30 A. M.

Orthodontia and Periodontia.

(Foyer Hall, Second Floor, Mechanics Building.)

OFFICERS OF SECTION.

Harry E. Kelsey, Chairman.....Baltimore, Md.
833 Park Ave.

Paul R. Stillman, Vice-Chairman..New York, N. Y.
52 Vanderbilt Ave.

W. C. Fisher, Secretary.....New York, N. Y.
501 Fifth Ave.

ANNOUNCEMENT.

In presenting its program for the Section on Orthodontia and Periodontia, the committee desires at this early date to express its thanks to all those who have consented to do the hard work which is required for the preparation of papers and clinics upon the subjects designated. No small amount of energy and persistent persuasion is required to induce men to curtail their vacation in order to present some professional matter to the members of even so large and important a body as the National Dental Association, and it would seem to argue the interest which the profession-at-large feels in its national body at the present time that so wide-spread and splendid a collection of essayists and clinicians could be procured for this event.

It was the object of the committee to have every section of the country represented, and strong efforts were made to this end, but in a few instances it seemed impossible to secure anyone from one or two sections of the country. So wide a correspondence as the preparation of even a section of the National program entails provides an opportunity for ascertaining the interest which is felt generally in the latest professional developments, and the response from men whose names are synonymous with the highest progress in their specialties has been most gratifying to the committee, and will, we feel sure, prove so to the members-at-large.

All of the material presented embodies new and advanced thought, experiments and discovery by men who have long led in special lines of activity, thus while it might prove beneficial for a section of the National devoted to specialties of general dentistry to present material that could be received and discussed at close range by men who had not had this opportunity at the special meetings of the orthodontists or periodontists, it was nevertheless the object of the committee to have material that would interest both the general practitioner and the specialist alike, and the committee will feel amply repaid for its endeavors as I am sure will those who are contributing to the program if such proves to be the case.

We urge every member who is interested in these subjects to attend the sessions whether he is a specialist in either line or in his general practice finds it necessary to do work in these specialties, or even if he only has a collateral interest in them, for we believe that the general practitioner must have an up-to-date familiarity with the specialties of his profession as much as the specialist must have an up-to-date knowledge of general practice in order to do justice to his patients.

"Case Management for Suppurative Periodontoclasia."
By Jules J. Sarrazin.....New Orleans, La.

"Psychology in Its Relation to Practice."
By Alfred P. Rogers....Boston, Mass.

"Some Phases of the Treatment of Suppurative Pericementoclasia."
By Ivan R. Cottrell..Rochester, N. Y.

Explanation of the Work Involved in the "Dissections Showing Muscles of Mastication." Prepared by the Orthodontic Department of Tufts College Dental School.
By A. LeRoy Johnson..Boston, Mass.

TUESDAY MORNING.

9:00 A. M. to 11:30 A. M.

Organization, Mouth Hygiene and Public Service.

(Men's Parlor, Paul Revere Hall, Second Floor, Mechanics Building.)

OFFICERS OF SECTION.

Burton Lee Thorpe, Chairman.....St. Louis, Mo.
415 Metropolitan Bldg.

E. L. Pettibone, Vice-Chairman....Cleveland, O.
6503 Detroit Ave.

E. R. Swank, Secretary.....Des Moines, Iowa.
605 Citizens Bank Bldg.

The talent for this section has been especially selected to present the proper

subjects in a manner that should terminate in an organization that will meet the demand of the people as well as the profession for education in preventive dentistry.

Preventive dentistry is all important and covers a vast field touching upon every phase of our profession and extending into the deep realms of general health. No one can practice true dentistry in any one of its branches without knowledge of the fundamentals of Mouth Hygiene and real results are not obtained without organization.

All papers to be followed by a clinic in the afternoon.

"Standardizing the Technic of Surgical Prophylaxis."
By Justin D. Towner.....Memphis, Tenn.

Discussed by
Paul R. Stillman.....New York City.
Jules J. Sarrazin....New Orleans, La.
De Lan Kinney.....New York City.

"Diet in Relation to Oral Hygiene."
By Wallace Seccombe.....Toronto, Canada.

Discussed by
Percy R. Howe.....Boston, Mass.
Thaddeus P. Hyatt....New York City.
Harold DeWitt Cross....Boston, Mass.

TUESDAY MORNING.

9:00 A. M. to 11:30 A. M.

History, Physiology, Pathology, Bacteriology and Chemistry. (Research).

(Paul Revere Hall, Second Floor, Mechanics Building.)

OFFICERS OF SECTION.

Weston A. Price, Chairman.....Cleveland, O.
8803 Euclid Ave.

R. H. Volland, Vice-Chairman...Iowa City, Iowa.

Harris R. C. Wilson, Secretary.....Cleveland, O.
701 Schofield Bldg.

General Topic of Section—"The Management of Pulpless Teeth."

Seminar on "Recent Advancement in Clinical and Diagnostic Methods."

"Limitations of the Roentgen Rays in Dental Diagnosis."
By Edwin J. Nestler.....Tenafly, N. J.

"Etiological and Bacteriological Studies"—
(a) The Etiology of Glomerulo Nephritis.
By E. T. Bell and Thomas B. Hartzell.....Minneapolis, Minn
(b) The Nature of Bacterial Proteins.
(c) Surface Tension Phenomena in Bacteriologic Investigation.
(d) The Metabolism of the Inorganic Salts by Bacteria."
By W. P. Larson and Thomas B. Hartzell.....Minneapolis, Minn.

"Experiments Showing the Effect of Diet Upon the Teeth and Jaws."
By Percy R. Howe.....Boston, Mass.

"Studies of Susceptibility and Immunity Factors in Relation to Dental Diagnosis."
By Weston A. Price.....Cleveland, O.

TUESDAY AFTERNOON.

1:30 P. M. to 4:00 P. M.

Operative Dentistry, Materia Medica and Therapeutics.

(Talbot Hall, Second Floor, Mechanics Building.)

Six groups will present unit clinics demonstrating technical points presented in the papers of the morning; three groups will present cavity preparation and gold filling technic, the other three every step in the technic for gold inlays.

TUESDAY AFTERNOON.

1:30 P. M. to 4:00 P. M.

Prosthetic Dentistry and Crown and Bridge Work.

Part I—Denture Section.

(Paul Revere Banquet Hall, Second Floor, Mechanics Building.)

Part II—Crown and Bridge Section.

(Reception Room, Paul Revere Hall, Second Floor, Mechanics Building.)

Part I—Denture Section.

(Paul Revere Banquet Hall, Second Floor, Mechanics Building.)

Clinics:

"Modern Methods of Teaching Dental Prosthetics."
By I. Lester Furnas.....Indianapolis, Ind.

"Aesthetic Dentures."
By V. C. Smedley.....Denver, Colo.

"Partial Dentures."
By Robert White Blake.....Indianapolis, Ind.

"Impression Taking of Edentulous Mouths."
By Ira G. Nichols.....Mandan, N. D.

"Surgical Preparation of the Mouth for Early Denture Restoration."
By Carl D. Lucas, Indianapolis, Ind.

"Geometry of Mandibular Movement."
By J. Leon Williams, New York City.

"Cast Full Upper Denture With Special Attention Given to Anatomical Form and Physiological Function of Soft Tissues."
By Claude J. Stansbery.....Seattle, Wash.

"Considering Some of the Detail When Securing the Correct Relation of the Mandible to the Maxilla in Edentulous Cases."
By Charles Lane.....Detroit. Mich.

"Exhibition of Models and Explanation of Difficult Cases."
By M. J. Holroyd.....Pittsburgh, Pa.

"The Intelligent Use of Harmony and Disharmony in the Selection of Artificial Teeth."
By George Wood Clapp.....New York City.

"The Continuous Gum Denture."
By Dayton Dunbar Campbell.....Kansas City, Mo.

"Important Steps in the Construction of Continuous Gum Dentures."
By W. Clyde McCleland.....Kansas City, Mo.

"Methods Affording Denture Service Immediately Following Extraction."
By Robert R. Gillis....Hammond, Ind.

"Occlusion and Articulation."
By John B. LaDue.....Mattoon, Ill.

"Practicality as Applied to Full Lower Dentures."
By Elbert B. Owen.....St. Louis, Mo.

"The How and the Wherefore of Impressions for Artificial Dentures."
By John H. Hospers.....Chicago, Ill.

"Exhibit Illustrating Modern Technic in Construction of Full Upper and Lower Dentures."
By Alex H. Paterson....Baltimore, Md.

Part II—Crown and Bridge Section.

(Reception Room, Paul Revere Hall, Second Floor, Mechanics Building.)

Clinics:

"Crown and Bridge Work From a New Point of View."
By Forrest H. Orton....St. Paul, Minn.

"Color and Characteristics of the Teeth."
By William D. Vehe.....Minneapolis, Minn.

"Modern Technic of Crown and Bridge Work, Dwelling Especially on Prophylactic Principles."
By William H. Elliott....Detroit, Mich.

"Bridge Work and Other Appliances in Periodontia Cases."
By Howard T. Stewart.....New York City.

"The Direct Method of Obtaining the Occlusion and Its Range by Using the Natural Jaw as An Articulator in Bridge Work."
By Fred W. Allen.....Boston, Mass.

TUESDAY AFTERNOON.

1:30 P. M. to 4:00 P. M.

Oral Surgery, Exodontia and Anesthesia.

(Lightwell Hall, Second Floor, Mechanics Bldg.)

Local Anesthesia.

Clinics:

"Some Considerations of the Anatomy Involved in Conductive Anesthesia."
By W. A. Cook.....Detroit, Mich.

"Further Advances in Local Anesthesia."
By S. L. Silverman.....Atlanta, Ga.

"Action of Hypotonic, Isotonic and Hypertonic Solutions on Blood and Tissue Cells of Living Animals."
By Ira G. Nichols.....Mandan, N. D.

"Untoward Sequella Following in the Wake of Conductive Anesthesia."
By Herbert A. Potts.....Chicago, Ill.

"Sections of Mandible and Maxilla."
By Wallace L. Ohl.....Pittsburgh, Pa.

"Nerve Supply of Maxilla in Relationship to Conductive Anesthesia."
By D. P. Snyder.....Columbus, O.

"Important Points in Conductive Anesthesia."
By Theodor Blum.....New York City.

"....."
By B. Lucien Brun.....Baltimore, Md.

"Faulty Technic in Conductive Anesthesia."
By Wm. A. Gobie.....Boston, Mass.

"Block Anesthesia in Oral Surgery and Dentistry." (Film.)
By Arthur E. Smith and Howard C. Miller.....Chicago, Ill.

TUESDAY AFTERNOON.

1:30 P. M. to 4:00 P. M.

Orthodontia and Periodontia.

(Foyer Hall, Second Floor, Mechanics Bldg.)

Clinics:

"Periodontia and Stomatology."
By Jules J. Sarrazin.....New Orleans, La.

"Prophylaxis and Periodontia."
By M. Jane Howard Sarrazin.....New Orleans, La.

Clinic showing numerous dissections to illustrate paper read at the morning session.
By A. LeRoy Johnson....Boston, Mass.

TUESDAY AFTERNOON.

1:30 P. M. to 4:00 P. M.

History, Physiology, Pathology, Bacteriology and Chemistry (Research).

(Paul Revere Hall, Second Floor, Mechanics Building.)

Progressive Clinics:

"Demonstration of Roentgen Ray Limitations and Practical Application of the Van Woert Localizer."
By Edwin J. Nestler.....Tenafly, N. J.

"Exhibition of Pathological Specimens and their Interpretation."
By Thomas B. Hartzell.....Minneapolis, Minn.

"Practical Application of Saliva Analysis in Dental Practice."
By H. Carlton Smith....Boston, Mass.

"Demonstration of the Relationship Between Variations in Oral Reactions to Focal Infections and Systemic Susceptibility."
By Weston A. Price.....Cleveland, O.

WEDNESDAY MORNING.

9:00 A. M. to 11:30 A. M.

Operative Dentistry, Materia Medica and Therapeutics.

(Talbot Hall, Second Floor, Mechanics Bldg.)

"Pulp Treatment and Root Canal Technic With Special Reference to the Prevention of Apical Infection."
By Edgar D. Coolidge.....Chicago, Ill.

"Radiography in Relation to Root Filling Technic and to Apical and Peridental Infections."
By Kurt H. Thoma.....Boston, Mass.

WEDNESDAY MORNING.

9:00 A. M. to 11:30 A. M.

Prosthetic Dentistry and Crown and Bridge Work.

Part I—Denture Section.

(Paul Revere Banquet Hall, Second Floor, Mechanics Building.)

Part II—Crown and Bridge Section.

(Reception Room, Paul Revere Hall, Second Floor, Mechanics Building.)

Part I—Denture Section.

(Paul Revere Banquet Hall, Second Floor, Mechanics Building.)

"Need and Means of Educating Laboratory Assistants."
By Victor H. Sears.....Chicago, Ill.

"The Colleges' Responsibility in Improving the Practice of Denture Prosthesis."
By W. F. Lasby....Minneapolis, Minn.

"Deep Bite (45 degree angle) Teeth Most Efficient for Restoring Edentulous Cases."
By Rupert E. Hall.....Chicago, Ill.

Part II—Crown and Bridge Section.

(Reception Room, Paul Revere Hall, Second Floor, Mechanics Building.)

"The Porcelain Jacket Crown and Its Value in Pulp Conservation."
By C. A. Nixon.....Valparaiso, Ind.

"Classification of Teeth as a Guiding Factor in the Correct Preparation for Porcelain Jacket Crowns."
By Hugh Avary....San Francisco, Cal.

"Some New Phases and Developments in Porcelain Jacket Crowns."
By N. W. Goodman.....Los Angeles, Cal.

"Vital Points in Securing Artistic and Ideal Restoration of Porcelain Jacket Crowns."
By George A. Thompson.....Chicago, Ill.

WEDNESDAY MORNING.

9:00 A. M. to 11:30 A. M.

Oral Surgery, Exodontia and Anesthesia.

(Lightwell Hall, Second Floor, Mechanics Bldg.)

Roentgenology.

"The Use of the Roentgen Ray for Diagnosis of Surgical Diseases in the Mouth."
By Kurt H. Thoma.....Boston, Mass.

"Radiographic Diagnosis: Use and Abuse."
By J. C. Brownlie.....Denver, Colo.

"Interpretation of Dental Radiographs."
By E. A. Kinley.....Boston, Mass.

WEDNESDAY MORNING.

9:00 A. M. to 11:30 A. M.

Orthodontia and Peridontia.

(Foyer Hall, Second Floor, Mechanics Bldg.)

"Orthodontic Appliances; Their use and Abuse."
By John V. Mershon.....
.....Philadelphia, Pa.

"Consideration of Some Matters Pertaining to Occlusion and the Occlusal Performance."
By James Kendall Burgess.....
.....New York, N. Y.

"Oral Hygiene, Oral Prophylaxis, and Prophylactic Fillings."
By Thaddeus P. Hyatt.....
.....New York, N. Y.

"Diagnosis of Periodontal Diseases."
By Russell W. Bunting.....
.....Ann Arbor, Mich.

"Mechanics of Mastication in Relation to the Health of Periodontium."
By Isador Hirschfeld.....
.....New York, N. Y.

WEDNESDAY MORNING.

9:00 A. M. to 11:30 A. M.

Organization, Mouth Hygiene and Public Service.

(Men's Parlor, Paul Revere Hall, Second Floor, Mechanics Building.)

"The Question of Dentifrices."
By C. Edmund K[illegible].....
.....New Orleans, La.

Discussed by
J. D. Patterson.....Kansas City, Mo.
G. Walter Dittmar.....Chicago, Ill.
Russell W. Bunting.....
.....Ann Arbor, Mich.

"The Oral Hygienist."
By Albert H. Stevenson.....
.....New York City.

Discussed by
Alfred C. Fones.....Bridgeport, Conn.
Thomas J. Barrett, Worcester, Mass.
C. N. Johnson.....Chicago, Ill.

WEDNESDAY MORNING.

9:00 A. M. to 11:30 A. M.

History, Physiology, Pathology, Bacteriology and Chemistry (Research).

(Paul Revere Hall, Second Floor, Mechanics Building.)

Seminar on "Recent Studies of Methods for Root Treatment and Root Filling."

"Studies on the Histo-Pathological Changes Produced in the Supporting Structures by Tooth Medications."
By Guthrie McConnell.
Alphonse Lang.
Linwood G. Grace.
Research Institute of the National Dental Association, Cleveland, Ohio.

"Report on Cases Treated by the Howe Formula in the Forsyth Dental Infirmary."
By Harold DeWitt Cross, Director.....Boston, Mass.

"A Study of the Efficiency of Tooth Medications and Root Fillings."
By Linwood G. Grace.
Florence Highberger.
Research Institute of the National Dental Association, Cleveland, Ohio.

WEDNESDAY AFTERNOON.

1:30 P. M. to 4:00 P. M.

Operative Dentistry, Materia Medica and Therapeutics.

(Talbot Hall, Second Floor, Mechanics Bldg.)

Clinics:

Six groups of unit clinics will demonstrate the papers of the morning. For the paper on root-canal technic every step of simple plans of asepsis, root-canal enlargement, measurement of canals and apical foramen and the placing of root fillings will be demonstrated in the most practical way. For the paper on radiography, films will be shown in illuminating boxes illustrating the advantages of the X-ray in making good root-canal fillings and special attention will also be devoted to the interpretation of radiographs of bone conditions.

WEDNESDAY AFTERNOON.

1:30 P. M. to 4:00 P. M.

Prosthetic Dentistry and Crown and Bridge-work.

Part I—Denture Section.

(Paul Revere Banquet Hall, Second Floor, Mechanics Building.)

Part II—Crown and Bridge Section.

(Reception Room, Paul Revere Hall, Second Floor, Mechanics Building.)

Part I—Denture Section.

(Paul Revere Banquet Hall, Second Floor, Mechanics Building.)

Lecture-Clinic:

"Mandibular Movements and the Forms of Bicuspids and Molars Necessitated Thereby."
By Alfred Gysi....Zurich, Switzerland.

Discussion.

Part II—Crown and Bridge Section.

(Reception Room, Paul Revere Hall, Second Floor, Mechanics Building.)

"The Porcelain Jacket Crown and Its Value in Pulp Conservation."
By C. A. Nixon.....Valparaiso, Ind.

"Classification of Teeth as a Guiding Factor in the Correct Preparation for Porcelain Jacket Crowns."
By Hugh Avary....San Francisco, Cal.

"Some New Phases and Developments in Porcelain Jacket Crowns."
By N. W. Goodman.....
.....Los Angeles, Cal.

"Vital Points in Securing Artistic and Ideal Restoration of Porcelain Jacket Crowns."
By George A. Thompson, Chicago, Ill., and W. A. Squires, Salt Lake City, Utah.

WEDNESDAY AFTERNOON.

1:30 P. M. to 4:00 P. M.

Oral Surgery, Exodontia and Anesthesia.

(Lightwell Hall, Second Floor, Mechanics Bldg.)

Roentgenology.

Clinics:

"The Use of the Roentgen Ray for Diagnosis of Surgical Diseases of the Mouth."
By Kurt H. Thoma.....Boston, Mass.

"Radiographic Diagnosis: Use and Abuse."
By J. C. Brownlie.....Denver, Colo.

"The Use and Abuse of the Radiograph in Dental Diagnosis."
By John F. Biddle.....Pittsburgh, Pa.

"Advantages and Disadvantages of the Radiograph in Oral Surgery and Exodontia."
By W. R. J. Wallace, Rochester, N. Y.

"Radiographic Evidence in Oral Surgery."
By Hugh W. McMillen and Howard A. Reid.....Cincinnati, O.

"Radiography Insufficiency."
By Robert L. Eller.....
.....Washington, D. C.

"Reflex Pains with an Obscure Etiology as Depicted by the X-ray."
By Thomas B. Wade.....
.....Philadelphia, Pa.

"Interpretation of Dental Radiographs."
By E. A. Kinley.....Boston, Mass.

WEDNESDAY AFTERNOON.

1:30 P. M. to 4:00 P. M.

Orthodontia and Periodontia.

(Foyer Hall, Second Floor, Mechanics Bldg.)

Clinical presentation of their subjects by essayists of the morning session.

WEDNESDAY AFTERNOON.

1:30 P. M. to 4:00 P. M.

History, Physiology, Pathology, Bacteriology and Chemistry (Research).

(Paul Revere Hall, Second Floor, Mechanics Building.)

Progressive Clinics:

"Practical Demonstration of Methods and Results of the Howe Treatment as Made on Children in the Forsyth Dental Infirmary."
By Percy R. Howe and Demonstrators.....Boston, Mass.

"Interpretation of Experiments on Root Medication."
By Linwood G. Grace....Cleveland, O.

"A Demonstration of Some Factors Showing Relative Efficiency of Several Root Filling Methods."
By .....

THURSDAY MORNING.

9:00 A. M. to 11:30 A. M.

Operative Dentistry, Materia Medica and Therapeutics.

(Talbot Hall, Second Floor, Mechanics Bldg.)

"Causes of Infections of the Gingivae and Their Relation to Peridental Infections."
By H. E. Friesell.....Pittsburgh, Pa.

"Histological and Pathological Studies of the Peridental Membrane, Cementum and Dentin with Particular Reference to Infections."
By W. G. Skillen.....Chicago, Ill.

THURSDAY MORNING.

9:00 A. M. to 11:30 A. M.

Prosthetic Dentistry and Crown and Bridge-work.

Part I—Denture Section.

(Paul Revere Banquet Hall, Second Floor, Mechanics Building.)

Part II—Crown and Bridge Section.

(Reception Room, Paul Revere Hall, Second Floor, Mechanics Building.)

Part I—Denture Section.

(Paul Revere Banquet Hall, Second Floor, Mechanics Building.)

"The Cast Gold Base."
By Harry E. Holaday.....
.....Kansas City, Mo.

"Fundamental Laws Governing the Construction of Partial Dentures and the Discussion of a Technic Which Will Meet the Requirements."
By E. E. Bailey.....Denver, Colo.

"Gold Partial Denture Construction and Attachments Best Suited for Various Cases."
By J. A. Graham.....
.....San Francisco, Cal.

Part II—Crown and Bridge Section.

(Reception Room, Paul Revere Hall, Second Floor, Mechanics Building.)

"Standardized Technic for Making Wax Patterns."
By T. W. Maves....Minneapolis, Minn.

"A 'Different' Casting Technic."
By K. W. Knapp....Des Moines, Iowa.

"Modern Trend in Bridge Work."
By Morton H. Mortonson.....
.....Milwaukee, Wis.

"A Phase of Crown and Bridgework."
By Edwin R. Hart.....St. Louis, Mo.

THURSDAY MORNING.

9:00 A. M. to 11:30 A. M.

Oral Surgery, Eoxdontia and Anesthesia.

(Lightwell Hall, Second Floor, Mechanics Bldg.)

Dental Diagnosis.

"The Necessity of a Broader Conception of the Term Dental Diagnosis."
By D. M. Graham.....Detroit, Mich.

"Systemic Oral Diagnosis."
By H. J. Kauffer.....New York, N. Y.

"The Alveolar Radiogram—What It Tells."
By Joseph A. Pollia.....
.....San Francisco, Cal.

THURSDAY MORNING.

9:00 A. M. to 11:30 A. M.

Orthodontia and Periodontia.

(Foyer Hall, Second Floor, Mechanics Bldg.)

A Plea for Closer Cooperation Between the Periodontist and Orthodontist.
By A. W. Ward.....
.....San Francisco, Cal.

"Importance of Early Diagnosis and Treatment in Periodontoclasia."
By Arthur Charles Hamm.....
.....Denver, Colo.

"Impressions and Models and the Study of Occlusion, With Lantern Slides."
By Martin Dewey....New York, N. Y.

"Original Method and Instruments for the Carving of Orthodontic Models."
By Clinton C. Howard.....Atlanta, Ga.

"Impression Taking, Model Making, Facial Casts, and the Study of Occlusion."
By Oren A. Oliver....Nashville, Tenn.

THURSDAY MORNING.

9:00 A. M. to 11:30 A. M.

Organization, Mouth Hygiene and Public Service.

(Men's Parlor, Paul Revere Hall, Second Floor, Mechanics Building.)

"Institutional Dentistry."
By Frederick A. Keyes.....Boston, Mass.

Discussed by
Harvey J. Burkhart, Rochester, N. Y.
Carl D. Lucas.....Indianapolis, Ind.
Don M. Gallie.....Chicago, Ill.
James V. May.....Boston, Mass.

"What Shall We Tell the People?"
By Rea Proctor McGee.....Pittsburgh, Pa.

Discussed by
Louis Meisburger.....Buffalo, N. Y.
Major L. G. Mitchell.....Washington, D. C.
Robert D. McIntosh.....Joplin, Mo.

"The Des Moines Toothbrush Clinic and Lecture."
By C. M. Kennedy..Des Moines, Iowa.
W. J. Charters..Des Moines, Iowa.
W. J. Cameron..Des Moines, Iowa.

Discussed by
Otto U. King.....Chicago, Ill.
A. E. Bonnell.....Muskogee, Okla.
L. P. Bethel.....Columbus, Ohio.

"Industrial Dentistry."
By Thaddeus P. Hyatt.....New York City.

Discussed by
Carl A. Schmidt.....Akron, Ohio.
R. W. Elliott.....Cleveland, Ohio.
C. W. Dunn.....Norwich, N. Y.

"Preventive Dentistry for Children, in General Practice."
By Philip R. Thomas.....Minneapolis, Minn.

Discussed by
Celia Rich.....Nashville, Tenn.
Frank O. Hetrick....Ottawa, Kansas.
Homer C. Brown.....Columbus, Ohio.

THURSDAY MORNING.

9:00 A. M. to 11:30 A. M.

History, Physiology, Pathology, Bacteriology and Chemistry (Research).

(Paul Revere Hall, Second Floor, Mechanics Building.)

Seminar on "Structural Changes."

"Cementum Changes, Their Causes and Effects."
By Harold K. Box.....Toronto, Canada.

(a) "Changes in the Root End Due to Periapical Infection."

(b) "Demonstration of Bacteria in Root Ends Surrounded by Granulomas."
By Kurt H. Thoma.....Boston, Mass.
By Leonard D. Nathan.....Boston, Mass.

"Histology of the Cementum as Related to Pulp Canal Surgery."
By W. Clyde Davis.....Lincoln, Ne' r.

The Dental Granuloma and Peri-dental Membrane Changes."
By Guthrie McConnell and Alphonse Lang—Research Institute of the National Dental Association.....Cleveland, Ohio.

THURSDAY AFTERNOON.

1:30 P. M. to 4:00 P. M.

Operative Dentistry, Materia Medica and Therapeutics.

(Talbot Hall, Second Floor, Mechanics Bldg.)

Clinics:

There will be six groups of unit clinics demonstrating the papers of the morning. For the paper on gingivitis, the various conditions leading to infections of the gingivae will be demonstrated on large plaster models, together with the technic which should be employed to eliminate or prevent such infections. The special feature of this demonstration will be the possibility of preventing a large percentage of peridental disease. For the paper on infections of the peridental membrane the demonstrations will consist of photomicrographs of recent studies of

the peridental membrane cementum and dentin made by new laboratory methods. These will serve to give a clear understanding of the pathological changes which occur in chronic infections of these tissues. Technic of new methods of treatment will also be demonstrated.

THURSDAY AFTERNOON.

1:30 P. M. to 4:00 P. M.

Prosthetic Dentistry and Crown and Bridge Work.

Part I—Denture Section,

(Paul Revere Banquet Hall, Second Floor, Mechanics Building.)

Part II—Crown and Bridge Section,

(Reception Room, Paul Revere Hall, Second Floor, Mechanics Building.)

Part I—Denture Section.

(Paul Revere Banquet Hall, Second Floor, Mechanics Building.)

Clinics:

"Device for Remounting and Grinding Artificial Teeth for the Correction of Inaccuracies in Occlusion and Articulation."
By A. K. Parks.....Montgomery, Ala.

"Need and Means of Educating Laboratory Assistants."
By Victor H. Sears.....Chicago, Ill.

"The Colleges' Responsibility in Improving the Practice of Denture Prosthesis."
By W. F. Lasby....Minneapolis. Minn.

"Deep Bite (45 degree angle) Teeth Most Efficient for Restoring Edentulous Cases."
By Rupert E. Hall.....Chicago, Ill.

"The Cast Gold Base."
By Harry E. Holaday.....
.....Kansas City, Mo.

"Fundamental Laws Governing the Construction of Partial Dentures and the Discussion of a Technic Which Will Meet the Requirements."
By E. E. Bailey.....Denver, Col.

"Gold Partial Denture Construction and Attachments Best Suited for Various Cases."
By J. A. Graham, San Francisco, Cal.

"Occlusion and Articulation With Deep Cusp Posteriors."
By Walter E. Beyer.....
.....Indianapolis, Ind.

"A Scrap Book as an Aid to the Prosthodontist."
By Harry J. Horner....Pittsburgh, Pa.

"Demonstration of the Monson Spherical Theory of Articulation."
By R. R. Blanchard....Springfield, Ill.

"Deafness as Influenced by Malposition of the Jaws."
By Walter H. Wright, Pittsburgh, Pa.

Part II—Crown and Bridge Section.

(Reception Room, Paul Revere Hall, Second Floor, Mechanics Building.)

Clinics:

"Standardized Technic for Making Wax Patterns."
By T. W. Maves....Minneapolis, Minn.

"Some Technic Applicable to Any System of Bridge-work, Including:
(a) Impression Taking.
(b) Securing and Handling Occlusion Waxes."
By James Kendall Burgess.....
.....New York, N. Y.

"Modern Trend in Bridge-work."
By James C. and Morton H. Mortonson .....Milwaukee, Wis.

"A Phase of Crown and Bridge Work."
By Edwin R. Hart.....St. Louis, Mo.

"A 'Different' Casting Technic."
By K. W. Knapp.....Des Moines, Ia.

THURSDAY AFTERNOON.

1:30 P. M. to 4:00 P. M.

Oral Surgery, Exodontia and Anesthesia.

(Lightwell Hall, Second Floor, Mechanics Bldg.)

Dental Diagnosis.

Clinics:

"Dental Diagnosis."
By D. M. Graham.....Detroit, Mich.

"Practical Examination."
By J. L. Austin....Chattanooga, Tenn.

"The Electric Current in Diagnosis."
By C. W. Marriott.....Atlanta, Ga.

"Complete Mouth Examination."
By Carl D. Lucas....Indianapolis, Ind.

"Clinical Findings with X-rays."
By Clifford E. Rose.....Buffalo, N. Y.

"Diagnosing and Charting Peridontal Lesions."
By J. Oppie McCall.....Buffalo, N. Y.

"The Use of the Faradic and Galvanic Currents in Dental Diagnosis."
By Wilber S. Benedict.....
.....Washington, D. C.

"Systemic Oral Diagnosis."
By H. J. Kauffer.....New York, N. Y.

"Brief and Efficient Methods of Mouth Examination and Diagnosis."
By H. Hayward Streett.....
.....Baltimore, Md.

"The Alveolar Radiograph—What It Tells."
By Joseph A. Pollia.....
.....San Francisco, Cal.

"....."
By Rea Proctor McGee.....
.....Pittsburgh, Pa.

THURSDAY AFTERNOON.

1:30 P. M. to 4:00 P. M.

Orthodontia and Periodontia.

(Foyer Hall, Second Floor, Mechanics Bldg.)

Clinical presentation of their subjects by essayists of the morning session.

THURSDAY AFTERNOON.

1:30 P. M. to 4:00 P. M.

History, Physiology, Pathology, Bacteriology and Chemistry (Research.)

(Paul Revere Hall, Second Floor, Mechanics Building.)

Progressive Clinics:

"Practical Interpretation of Cementum Changes and Demonstration of the Normal Communication from the Dentin Thru the Cementum, and Its Significance in Health and Disease."
By Harold K. Box....Toronto, Canada.

"Detailed Interpretation of Apical Changes Accompanying Periapical Infection."
By Kurt H. Thoma.....Boston, Mass.
Leonard D. Nathan..Boston, Mass.

"Pulp Canal Surgery From a Histo-Pathological Standpoint."
By W. Clyde Davis.....Lincoln, Nebr.

"Pathological Conditions Which Indicate Curettements Following Extractions."
By Hugh W. MacMillan.....
.....Cincinnati, Ohio.

FRIDAY MORNING.

9:00 A. M.

Surgical Clinics.

"Local versus General Anesthesia Used in Oral Surgery Operations." (Massachusetts Homeopathic Hospital.)
By R. H. Norton.....Boston, Mass.

"Cases as Available."
By LeRoy M. S. Miner, Boston, Mass.

"Cases as Available."
By Kurt H. Thoma.....Boston, Mass.

1. "Maxillary Sinusitis Operating Thru the Canine Fossa."
2. "Alveolectomy — The Surgical Treatment for Pyorrhea Alveolaris."
3. "Neurectomy—An Intraoral Resection of the Second or Third Division of the Fifth Nerve." (Carney Hospital, South Boston, Mass.)

By Charles M. Proctor, Boston, Mass.

"Demonstration of Technic on the Cadaver, and Exhibition of Collection of Specimens Showing Range of Variability in Form of Sinuses."

"Conservative Surgery of the Maxillary Sinus from the Dental View-Point."
(Massachusetts General Hospital.)
By George H. Wright....Boston, Mass.

PROGRAM.—GENERAL SESSIONS.

TUESDAY EVENING, AUGUST 24.

8:00 P. M.

FIRST GENERAL SESSION.

(Paul Revere Hall, Mechanics Building.)

Invocation.

By Rev. Lee S. McCollister, D. D. .....Boston, Mass.
Dean, Crane Theological School, Tufts College.
Chaplain, General National Society, Sons of the American Revolution.

Addresses of Welcome.

By Hon. Channing H. Cox.....Boston, Mass.
Lieutenant-Governor of the Commonwealth of Massachusetts.

Hon. Andrew J. Peters.....Boston, Mass.
Mayor of City of Boston.

Eugene Hanes Smith.....Boston, Mass.
Dean Harvard Dental School, Representative of President A. Lawrence Lowell, Harvard University.

John Albert Cousens, A. B.....Boston, Mass.
President of Tufts College.

Response to Addresses of Welcome.

By Donald Mackay Gallie.....Chicago, Ill.

President's Address.

By John V. Conzett....Dubuque, Iowa.

WEDNESDAY EVENING, AUGUST 25.

8:00 P. M.

SECOND GENERAL SESSION.

(Paul Revere Hall, Mechanics Building.)

"The Diagnosis and Treatment of Latent Infection About the Jaws."

By Sir Kenneth Goadby.....London, England.

LETTER FROM DR. GOADBY.

"83 Harley Street, W. 1,
London, England,
June 10, 1920.

Dr. Otto U. King, Chicago, Ill.:

Dear Sir: I am much obliged to you for your letter of May 19th, and I cabled to you upon its receipt. I have very much pleasure in accepting your kind invitation to address your Association in Boston on August 25th.

I propose leaving Liverpool by the S. S. 'Meleta' on August 13th, traveling via Quebec. The Company informs me that I shall arrive in Boston on the 23rd of August.

With regard to the title of my lecture, I propose taking 'The Diagnosis and Treatment of Latent Infection about the Jaws' as my subject. I gather from your literature, as well as from personal communications, that the same wave of impatience, for treating mouth infections of a chronic nature, is spreading thru America, as it is in this country, and as the diagnosis of latent infection is one of special importance, in deciding whether surgical measures should be resorted to, or whether after all no actual infection of a serious nature is in progress, may perhaps be a subject which will appeal to you under the present circumstances.

I have given a good deal of attention during the last few years to determining if, or if not, in any given instance the patient is suffering from the generalized effects of local disease, or whether the local disease is calling forth resistance in the power of the body, to warrant prolonged treatment of the Septic Focus.

It is difficult to put all this in the title of the paper; but the title, I think, is sufficiently wide to embrace these several points.

Believe me,
Yours sincerely,
(Signed) KENNETH GOADBY."

THURSDAY EVENING, AUGUST 26.

8:00 P. M.

THIRD GENERAL SESSION.

(Paul Revere Hall, Mechanics Building.)

Installation of Officers.

"The Future of Dentistry."

By H. E. Friesell.....Pittsburgh, Pa.

LIST OF EXHIBITORS.

The Abbott Laboratories, 4753 Ravenswood Ave., Chicago, Ill.

Adams X-ray Company, Woodward Ave., at Steward, Detroit, Mich.

J. Q. Adams & Co., 120 Boylston St., Boston, Mass.

Julius Aderer, Inc., 47 West 42nd Street, New York City, New York.

Alkalol Co., Taunton, Mass.

American Cabinet Company, Two Rivers, Wisconsin.

American Surgical Specialty Co., 6 East Lake Street, Chicago, Ill.

Antidolor Manufacturing Co., Springville, Erie County, New York.

Claudius Ash Sons & Co., 1-3 Union Square, New York City, New York.

Austin Mfg. Co., James Bldg., Chattanooga, Tenn.

The Bacon Manufacturing Co., 416 La Salle Bldg., Minneapolis, Minn.

Belding Bros. & Co., 68 Essex St., Boston, Mass.

The Bestol Co., Boston, Mass.

Frank S. Betz Co., Hammond, Ind.

Borine Mfg. Co., 551 West 42nd Street, New York City, New York.

Boston Dental Laboratory, 171 A Tremont St., Boston, Mass.

Harry J. Bosworth Co., Tower Bldg., Chicago, Ill.

Bristol-Myers Co., 281 Greene Ave., New York City, New York.

Buffalo Dental Mfg. Co., Buffalo, N. Y.

Burns Dental Casting Machine Co., 88 State St., Flushing, Long Island, N. Y.

Campbell Electric Co., Lynn, Mass.

Dr. C. L. Card, 801 Flanders Bldg., Philadelphia, Pa.

Wilmot Castle Co., Rochester, N. Y.

L. D. Caulk Co., Milford, Delaware.

A. C. Clark & Co., Grand Crossing, Chicago, Ill.

Cleveland Dental Mfg. Co., Cleveland, Ohio.

The Colgate Co., Jersey City, New Jersey.

Columbia X-ray & Electric Corporation, 131 E. 23rd St., New York City, N. Y.

The Columbus Dental Mfg. Co., Wager & Jackson Sts., Columbus, Ohio.

Columbus Aseptic Furniture Co., Columbus, Ohio.

Connecticut Coat & Cover Co., Shelton, Conn.

Consolidated Dental Mfg. Co., 120 Boylston St., Boston, Mass.

H. G. Crane, 226 Cypress St., Brookline, Mass.

J. J. Crimmings Co., 136 Boylston Street, Boston, Mass.

Cutler Dental Supply Co., 281 Chelsea St., Everett, Mass.

Parke, Davis & Co., Inc., Hudson & Vestry Sts., New York City, New York.

Dean Dental Co., 120 Boylston Street, Boston, Mass.

Thomas J. Dee & Co., 5 So. Wabash Ave., Chicago, Ill.

Dental Chemical Co., Roslyn, Montgomery County, Pa.

Dental Mfg. Co., 220 West 42nd St., New York City, New York.

Dental Products Co., 5 So. Wabash Ave., Chicago, Ill.

Dental Specialty Co., 1638 California St., Denver, Colo.

Dentists Supply Co., 220 West 42nd St., New York City, New York.

Detroit Dental Mfg. Co., 20 Milwaukee Ave., Detroit, Mich.

The Dental Pharmaceutical Co., Holton, Kansas.

Denver Chemical Co., 57 Laight St., New York City, New York.

The De Vilbiss Mfg. Co., Toledo, Ohio.

Donaldson Dental Mfg. Co., 1904 M. St., N. W., Washington, D. C.

The Dresch Laboratories Co., Toledo, Ohio.

De Sanno and Hoskins, 1252 N. Broad St., Philadelphia, Pa.

Eastman Kodak Co., Rochester, New York.

Edwards X-ray Corporation, 111-113 N. New Jersey St., Indianapolis, Ind.

Electro Dental Manufacturing Co., 3269 Arch St., Philadelphia, Pa.

J. F. Eldred, D. D. S., 120 Boylston St., Boston, Mass.

Engeln Electric Co., 4601-11 Euclid Avenue, Cleveland, Ohio.

John F. Elred, D. D. S., Consulting Prosthetist, 208 East 12th St., New York City.

Fellows Medical Mfg. Co., 26 Christopher St., New York City, New York.

H. Fischer & Co., Inc., 705 Lexington Ave., New York City, New York.

H. G. Fischer & Co., 2343 Wabansia Ave., Chicago, Ill.

The Flaherty Mfg. Co., West Bend, Wis.

The Foregger Co., 47 West 42nd St., New York City, New York.
G. J. Frank & Co., Refiners, 46 Hawthorn Ave., Winthrop, Mass.
Friedman Bros., 22 E. Washington St., Chicago, Ill.

Garhart Dental Specialty Co., Hill Bldg., Somerville, No. 42, Mass.
General Electric Co., Schenectady, New York.
General X-Ray Co., Boston, Mass.
Goldsmith Bros., 29 E. Madison St., Chicago.

Harvard Co., Canton, Ohio.
The Halverson Co., 180 N. Dearborn St., Chicago, Ill.
The Heidbrink Co., 420 So. Sixth St., Minneapolis, Minn.
Jay E. Healey, 44 West 44th St., New York City.
Mrs. W. M. Herriott & Son., L. Box 448, Indianapolis, Ind.
John Hood Co., 178 Tremont St., Boston, Mass.
Horlick's Malted Milk Co.. Racine, Wis.

International Radio Telegraph Co., 326 Broadway, New York City, New York.
Industrial Rubber Corp., Long Island City, N. Y.
J. W. Ivory, 21 No. 13th Street, Philadelphia, Pa.

J. D. Justi & Son, 1301 Arch Street, Philadelphia, Pa.

Kal-Pheno Chemical Co., 3218 Chestnut St., Philadelphia, Pa.
W. A. Kelsey, 3529 Ninth Ave., Minneapolis, Minn.
C. G. King Co., 162 Clifford St., Providence, R. I.
King's Specialty Co., Fort Wayne, Ind.
The Kolynos Co., New Haven, Conn.
Kress & Owen Co., 361 Pearl St., New York City, N. Y.

H. R. Lathrop & Co., 116 Beekman St., New York City, N. Y.
Lavoris Chemical Co., Minneapolis, Minn.
Lea & Febiger, 706 Sanson St., Philadelphia, Pa.
Lincoln Dental Mfg. Co., 1600 Chestnut St., Philadelphia, Pa.
Lochhead Laboratories, 120 Boylston St., Boston, Mass.

F. W. Massell & Co., 120 Boylston St., Boston, Mass.
Manhattan Coat Factory, 3223 N. Halsted St., Chicago, Ill.
Metallic Hypo-Washer Co., 211 East 62nd St., New York City, New York.

Metropolitan Dental Supply Co., 120 Boylston St., Boston, Mass.
H. A. Metz Laboratories, Inc., 122 Hudson St., New York City, New York.
C. V. Mosby Co., 801 Metropolitan Bldg., St. Louis, Mo.
J. Bird Moyer Co., Inc., 1212 Vine St., Philadelphia, Pa.
The Mynol Chemical Co., Real Estate Bldg., Philadelphia, Pa.

J. M. Ney Co., Hartford, Conn.
Novocol Chemical Co., 2923 Atlantic Ave., Brooklyn, N. Y.

Only Safe Electric Mfg. Co., 1177 Washington St., Dorchester, Mass.

Park, Davis & Co., P. O. Box 7, Station V, New York City, New York.
M. F. Patterson Dental Supply Co., Box 1100, St. Paul, Minn.
Pelton & Crane Co., Detroit, Mich.
Pepsodent Co., 1104 S. Wabash Ave., Chicago, Ill.
Prophylactic Tooth Powder Co., 38 E. 61st St., New York.
Jacob Petry Retainer Co., 2022 Lowrie St., Pittsburgh, Pa.
C. H. Phillips Chemical Co., 128 Pearl St., New York City, New York.

Randall-Faichney & Co., 76 Atherten St., Jamaica Plain, Boston, Mass.
Ransom & Randolph Co., Toledo, Ohio.
S. H. Reynolds Son & Co., Boylston St., Boston, Mass.
J. E. Reid Instrument Co., 408 N. 12th St., Philadelphia, Pa.
Ritter & Co., 200 Fifth Avenue, New York City, N. Y.
Edward Rowan, Inc., 625 E. 163rd Street, New York City, New York.
Emil J. Rothman, 1156 Oklman Ave., Cleveland, Ohio.

Safety Anaesthesia Apparatus Concern, 1652 Ogden Ave., Chicago, Ill.
Scanlan Morris Co., Madison, Wis.
Sentanel Remedies Co., Masonic Temple, Cincinnati, Ohio.
Seymour Chemical Co., 311 Eddy St., Providence, R. I.
Lee S. Smith & Son Mfg. Co., Pittsburgh, Pa.
Specialty Mfg. Co., 15 Spruce St., New York City, New York.
Standard Emulsion Co., 141 Greene St., New York City, New York.
I. Stern & Co., 104 W. 116th St., New York City, New York.
I. Stern Dental Supply Co., New York City.

Stratford-Cookson Co., 42 Ludlow St., Philadelphia, Pa.

Sterling Dental Mfg. Co., Harvard Square, Cambridge, Mass.

Sterling Dental Mfg. Co., 120 Boylston St., Boston, Mass.

Samuel G. Supplee Co., 1 Union Square, New York City, New York.

Toledo Technical Appliance Co., 2226-36 Ashland Ave., Toledo, Ohio.

Thompson Plaster Co., Leesburg, Virginia.

Twentieth Century Broach Co., 51 E. 42nd St., New York City, New York.

The Thoro Corporation, 217 W. Huron St., Chicago, Ill.

Dr. Francis H. Vallender, 175 Tremont St., Boston, Mass.

Victor Electric Corporation, 236 South Robey St., Chicago, Ill.

Wappler Electric Co., Long Island, N. Y.

Washington Drug Products Co., 29 West 129th St., New York City, New York.

Webber Dental Mfg. Co., Canton, Ohio.

Weissfeld Bros. & Cross, 345 W. Broadway, New York City, New York.

H. G. Werner, 3010 St. Paul Ave, Milwaukee, Wis.

H. B. Wiggin's Sons & Co., Bloomfield, New Jersey.

S. S. White Dental Mfg. Co., 211 So. 12th St., Philadelphia, Pa.

Wilson & Wilson, 55 Sudbury St., Boston, Mass.

Wilmot Castle Co., 120 Boylston St., Boston, Mass.

John H. Wood Co., 126 Market St., Philadelphia, Pa.

Yoder Mfg. Co., 528 Penn Sq., Reading, Pa.

SPECIAL NOTICE TO EXHIBITORS.

The Exhibit Committee does not want to see any dealer absent from the largest Dental Exhibit ever held in the history of exhibits. The National Dental Association meeting to be held in Boston in August has already reached this state. Any part of the 2,000 feet of exhibit space is splendid and it is all sold except about 250 feet of space. Better get in line and do it **now.**

DR. F. O. KIDD,
Chairman of Exhibits,
P. O. Box 587, Fall River, Mass.

SPECIAL ANNOUNCEMENTS.

The entire program will be held in the Mechanics Building.

Registration office open Monday, August 23, at 8:30 A. M.

The House of Delegates will meet on Monday, at 10:30 A. M. and 2:00 P. M.

The section programs will be conducted as a Seminar Course with papers in the morning, beginning at 9:00 o'clock, and clinics in the afternoon, at 1:30. Each section program will consist of three full days of papers and clinics, the first sessions beginning on Tuesday morning. Each section has been assigned to a special hall in which their entire program and clinics will be given.

The first general session will be held on Tuesday evening at 8:00 P. M. in Paul Revere Hall. The subsequent general sessions will be held at the same time and place on Wednesday and Thursday evenings.

No one will be admitted to the Boston meeting except bona fide members of the National Dental Association. To avoid confusion, BRING YOUR 1920 MEMBERSHIP CARD.

Dr. R. H. Volland, Chairman of the Clinic Committee, vouches for an unusually fine clinic program.

GENERAL CLINIC PROGRAM.

The general clinical program for Friday morning is not yet completed. It was not thought advisable to do much active work on this part of the program until the sectional clinics were practically completed, so the complete program cannot appear in this issue.

Up to date, about 100 clinicians appear on this program. This does not include the clinics that will be repeated from the sections.

Ten unit clinics will participate. A large variety of subjects are to be presented—Crown and Bridge-work, Dentures, Casting, Porcelain Jacket Crowns,

Root Canal Sterilization, Bookkeeping and Business, Prophylaxis and Oral Hygiene, Orthodontia, Anesthesia, Oral Surgery, etc.

The plan of organization of this meeting provides a large number of clinics and ample time for the members to study these demonstrations. There will be special clinics each afternoon, and general clinics on Friday morning.

R. H. VOLLAND, Iowa City, Ia.,
Chairman, Clinic Committee.

INDUSTRIAL DENTISTRY.

There will be a conference on industrial dentistry at Mechanics Hall, Boston, Mass., beginning Wednesday, August 25th at 5 P. M. This will be open to all interested in industrial dentistry.

E. L. PETTIBONE, Secretary,
National Association Industrial
Dental Surgeons,
6503 Detroit Ave.,
Cleveland, Ohio.

BOSTON BOUND?

Going to Boston? You ought to go.

We are likely to get so absorbed in the dental **business** as to forget our very real dependence upon the dental **profession.**

The dental profession **could** get along without the dental business.

It did for a long time.

But the dental business would very promptly curl up and die the death if it were not for the dental profession.

So then, as we love our lives, let's not lose opportunities of keeping in tune with professional matters.

There will be something doing in Boston, every day of the five—August 23rd to 27th.

Better be there. (Editorial in May Proofs.)

DENTAL SPECIAL—CHICAGO TO BOSTON.

The Transportation Committee has been unable to secure reduced fares to the Annual Meeting in Boston.

It is customary to apply first to the Passenger Association in whose territory the meeting is to be held. Their decision is final, and is binding upon the other Passenger Associations. Quoting from the reply of the New England Passenger Association, to whom application was made: "In response to your application dated March 18, for reduced fares on account of the above named occasion.

"It has been deemed necessary to adopt a conservative policy in New England at this time, and decline to make reduced fares for conventions, conferences, meetings, and special occasions.

"As this course is being uniformly followed, it is regretted that your application must be declined.

"It also being understood that your organization does not come within the limitations of organizations of religious, fraternal, educational (elementary or rudimentary), charitable nor military character, it does not seem that favorable results would be obtained by further submitting your application for reductions from points in other Territorial Passenger Associations outside of New England."

Chicago to Boston.

A special train via New York Central Lines (Lake Shore) will leave Chicago Saturday, August 21st, at 10:30 A. M., arriving in Boston on Sunday at 2:55 P. M.

Fare from Chicago, including war tax	$33.03
Lower berth, including war tax	7.29
Upper berth, including war tax	5.83
Section, including war tax	13.12
Compartment, including war tax	20.52
Drawing room, including war tax	25.92

For reservations, address Dr. D. C. Bacon, Chairman Transportation Committee, 31 North State St., Chicago, Ill.

INCLUDE THE BOSTON MEETING IN YOUR SUMMER VACATION.

By Waldo E. Boardman, General Chairman, Local Committee on Arrangements.

In planning your summer outing, make sure that it includes attendance of the convention of the National Dental Association to be held in Boston, August 23 to 27.

This convention will undoubtedly be one of the largest in the history of the Association. More than 3,500 reservations have been arranged at the hotels and these are rapidly being allotted in response to requests.

Boston does not need its praises sung; it is known to the world for its revolutionary and other historical associations—the oldest university Harvard situated across the famous Charles River; Bunker Hill Monument commemorative of the celebrated battle; the old North Church where were hung the lanterns signaling the commencement of the ride of Paul Revere to Concord and Lexington to appraise the inhabitants of the approach of the British; old Faneuil Hall, known as the Cradle of Liberty; the old State House where once were held the Great and General Court; Kings Chapel and Burial Ground; the burial ground near Park Street Church, where noted heroes are buried; the old South Church, where Warren entered thru the pulpit window to deliver his famous oration—these and other exceedingly interesting historical places and buildings can be seen as most of them are within walking distance from headquarters of the convention, and there will be ample time between sessions.

No large city can boast of more beautiful suburbs than Boston. Motoring over roads unsurpassed anywhere will be greatly enjoyed. Some will wish to enjoy the sea-shore with bathing, yachting and fishing, and others the splendid golf links.

Some jokes have been perpetrated upon our fair city—asked in what state Boston is, the reply has been that Boston is not in a state, but state of mind. Dr. Oliver Wendell Holmes once wrote that the "Boston State House is the Hub of the Solar System." We invite all to our city to enjoy its beauty, and historical features, and to realize the foundation upon which is built its fame as one of America's beautiful and noted cities.

The Local Committee is perfecting all arrangements for the convention and everything is indicative of a successful and enjoyable meeting.

PLANS FOR ENTERTAINING MEMBERS AND GUESTS AT BOSTON MEETING.

Arrangements for entertaining the members and guests of the National Dental Association in Boston are nearly complete. Dr. M. C. Smith, chairman of the entertainment committee, has drawn up a program which will prove especially interesting to those who will travel many miles to attend this meeting. Feeling that between two and three thousand ladies will come to Boston, extensive plans are made for their benefit. Dr. Smith reports the following:

Automobile trips to Lexington and Concord, and the North and South Shore.

Many sight-seeing trips, showing places of historic interest. Delightful ocean excursion to beaches near Boston, and a real fish dinner if desired. A tea and musical to the visiting ladies will be one of the special features. A shopping tour will be arranged for the ladies wishing to visit the shopping district. Arrangements for golf have been made for Monday, August 23; tournaments all day at Woodlawn.

Realizing that between eight and ten thousand will register at this meeting many societies are planning gatherings to take place during the week. Among these we may mention:

August 23—American Dental Library and Museum Association.

August 23—Delta Sigma Delta Fraternity, annual meeting, 9 A. M., Copley-Plaza. Boston Headquarters, annual banquet, 6:30 P. M., Copley-Plaza.

August 23—The National Alumni Chapter of the Psi Omega Fraternity. Annual meeting, Somerset hotel, Boston headquarters. Business session, 2 P. M. Annual dinner, 6:30 P. M.

The Grand Master of the National Alumni Chapter, Dr. P. V. McParland, Highland Bldg., Pittsburgh, Pa., should be addressed for further information.

August 23-24—National Association of Dental Examiners.

National Association of Detail Men, annual dinner and meeting time, place and further particulars, address Dr. E. C. Newton, Secretary N. A. D. M., 9 Tucker Street, Newton, Mass.

Meeting of the Alumni of Baltimore College of Dental Surgery for further information address Dr. Frank P. Duffey, President New England Alumni Association, B. C. D. S., Riverpoint, R. I.

T. E. JEFFREY.

PROGRAM NATIONAL SOCIETY OF DENTURE PROSTHETISTS, HARVARD UNIVERSITY DENTAL DEPARTMENT, BOSTON, MASSACHUSETTS, AUGUST 11 TO 21, 1920.

WEDNESDAY, AUGUST 11.

9:00 A. M.

President's Address.

Roll call of committees, discussions, etc.

Organization of committees, room assignments and examination of patients for work.

1:30 P. M.

Committee work.

THURSDAY, AUGUST 12.

9:00 A. M.

General assembly for reports, recommendations and discussions.

Committee Work.

1:30 P. M.

Committee Work.

FRIDAY, AUGUST 13.

9:00 A. M.

General assembly for reports, recommendations and discussions.

Committee Work.

1:30 P. M.

Committee Work.

SATURDAY, AUGUST 14.

9:00 A. M.

General assembly for reports, recommendations and discussions.

Committee Work.

1:30 P. M.

Historical trip for members and their families to be arranged for by a special committee.

MONDAY, AUGUST 16.

9:00 A. M.

General assembly for reports, recommendations and discussions.

Committee Work.

1:30 P. M.

Committee Work.

TUESDAY, AUGUST 17.

9:00 A. M.

General assembly for reports, recommendations and discussions.

Committee Work.

1:30 P. M.

Committee Work.

WEDNESDAY, AUGUST 18.

9:00 A. M.

General assembly for reports, recommendations and discussions.

Committee Work.

1:30 P. M.

"The Anatomy and Physics of Mastication."
By George H. Wilson.....Cleveland, O.
Discussion.

"Geometry of Mandibular Movements."
By J. Leon Williams..New York City.
Discussion.

"Occlusion."
By George H. Monson, St. Paul, Minn.
Discussion.

THURSDAY, AUGUST 19.

9:00 A. M.

"A Study of the Geometry of the Mandibular Movements, Showing Definite Tests of the Same."
By Ruper E. Hall.....Chicago, Ill.
Discussion.

"The Forms and Functions of the Teeth With Relation to the Plane of Occlusion and Mandibular Movement."
By Martin Dewey....New York, N. Y.
Discussion.

"Some Observation on the Condyloid Path."
By H. J. Prentiss.....Iowa City, Ia.
Discussion.

1:30 P. M.

"Deafness as Influenced by Malposition of the Jaws."
By Walter H. Wright.....Pittsburgh. Professor Anatomy and Prosthetic Dentistry, University Pittsburgh.
Discussion.

"Three Simple Laws in the Selection of Artificial Teeth."
By George Wood Clapp.....
.....New York City.
Discussion.

"The Continuous Gum Denture."
By Dayton D. Campbell, Kansas City.
Discussion.

FRIDAY, AUGUST 20.

9:00 A. M.

"Methods Affording Denture Service Immediately Following Extractions."
By Robert H. Gillis....Hammond, Ind.
Discussion.

"The Business Side of Prosthodontia."
By William A. Giffen....Detroit, Mich.
Discussion.

"Modern Methods of Teaching Dental Prosthetics."
By I. Lester Furnas, Indianapolis, Ind., Professor Prosthetic Dentistry, Indiana Dental College.
Discussion.

1:30 P. M.

Committee reports.

"Geometry of Mandibular Movements and Articulars."
By Robert H. Gillis....Hammond, Ind.

"Mouth Examination and Impression Taking."
By Victor H. Sears....Salt Lake City.

"Aesthetics and Art."
By P. C. Lowery.....Detroit, Mich.

"Classification of Mouth Tissue Conditions and Treatment Indicated."
By George H. Brenner.....
.....Milwaukee, Wis.

"Technic."
By I. Lester Furnas.....Indianapolis.

SATURDAY, AUGUST 21.

9:00 A. M.

Clinics.

Election of Officers, etc.

NATIONAL SOCIETIES, 1920.

August.

23-24-25-26-27—National Dental Association, Boston.

23-24—National Association of Dental Examiners, Boston.

23—American Dental Library and Museum Association, Boston.

STATE SOCIETIES.

November.

18—District of Columbia, George Washington University, Washington, D. C.

30—Dec. 1-2, Ohio, Columbus.

Arizona, Phoenix.

December.

10—Delaware, Wilmington.

Dates to Be Announced.

Arkansas, Little Rock.

California State.

Louisiana, New Orleans.

Oregon, Portland.

Washington, Tacoma.

NATIONAL SOCIETY OF DENTURE PROSTHETISTS.

The National Society of Denture Prosthetists will hold its Second Annual Meeting in Boston, Mass., in the buildings of the Harvard University Dental Department, August 19th, 20th and 21st. Members of the profession interested in Prosthetics are cordially invited to attend these sessions.

DAYTON D. CAMPBELL, Secretary,
Shukert Bldg., Kansas City, Mo.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The annual meeting of the National Association of Dental Faculties will be held at the Lenox Hotel, Boston, Massachusetts, August 20 and 21.

DR. C. C. ALLEN, Secretary,
Tenth and Troost Sts.,
Kansas City, Mo.

ASSOCIATION OF MILITARY DENTISTS.

Association of Military Dental Surgeons will hold their annual meeting in Boston, Mass., August 24 and 25, 1920.

ROBT. T. OLIVER, President.

G. H. CASADAY, Secy-Treas.,
Presidio of San Francisco, California.

AMERICAN DENTAL LIBRARY AND MUSEUM ASSOCIATION.

The next annual meeting of the American Dental Library and Museum Association will be held, August 23rd, 1920, 3:30 P. M., at the Forsyth Dental Infirmary, Boston, Mass.

At that session the official business will be taken up and a permanent Constitution adopted.

All Societies, Colleges, etc., applying before that time will be included as Charter Members.

Another session will be held later in the week to suit the convenience of the majority of members, when an interest-

ing program pertaining to library and museum matters will be given.

Dr. Wm. Bebb will present a short paper dealing with methods of building libraries and museums and conducting same.

Dr. L. Pierce Anthony, Dental Cosmos: Advisability of compiling a new dental bibliography, a standard reference list of books on dentistry published thruout the world. The last one compiled in this country was by C. G. Crowley in 1885.

Dr. B. W. Weinberger: Bibliography of Dental Periodicals published in the United States and Great Britain.

All those interested are requested to be present.

A. F. ISHAM, Pres.,
B. W. WEINBERGER, Secy.-Treas.,
40 East 41st St., N. Y. C.

DELTA SIGMA DELTA FRATERNITY ANNUAL MEETING 1920.

The Thirty-sixth annual meeting of the Supreme Chapter of Delta Sigma Delta Fraternity will be held in the Copley Plaza Hotel, Boston, Mass., on Monday, August 23, 1920, at 9:30 A. M. Annual banquet at 6:30 P. M.

EDWIN T. DARBY,
Supreme Grand Master.

Attest:
R. HAMILL D. SWING,
Supreme Scribe.

CALIFORNIA STATE DENTAL ASSOCIATION.

Golden Jubilee Meeting.

The 50th annual meeting (Golden Jubilee) of the California State Dental Association will be held August 2, 3, 4, and 5 at the Fairmount Hotel, San Francisco. The program will include clinics, class instruction by visiting clinicians, and a one day's entertainment to celebrate the Golden Jubilee of the State Association.

JOHN W. LEGGETT, Secretary,
909 Hyde Street, San Francisco.

CANADIAN DENTAL ASSOCIATION.

The Canadian Dental Association will hold its tenth biennial meeting in Ottawa, Canada, August 17th, 18th, 19th, and 20th, 1920.

SYDNEY W. BRADLEY, Sec'y,
206 Laurie Ave. W., Ottawa, Canada.

A DENTAL SURVEY IN NEW YORK CITY UNDER THE AUSPICES OF THE NEW YORK CHAPTER AMERICAN RED CROSS.

A survey which Dr. Alfred H. Stevenson, Professor of Preventive Dentistry at Columbia University, declares is the first of its kind ever made in New York City, is being undertaken by the Health Service Department of the New York County Chapter American Red Cross.

All the free dental clinics for children in the city are being asked to cooperate in getting together complete and authoritative statistics on the extent and character of the dental needs among the children.

A letter is being sent by the Department to each of the 47 clinics on Manhattan Island, asking their cooperation and requesting them to add to their card indexes of cases, a type of record card which has been prepared by the department in consultation with the association for improving the condition of the poor and the leading dental authorities in the city. The card suggested is of the simplest kind and is designed to make a record of examinations only. It is not to supersede any existing methods of recording examinations and treatments. Its chief merit in the eyes of the department is that it will be uniform for all 47 agencies.

On the basis of returns for twelve months, the department plans to make a report, showing the scope and character of the needs for dental work among the children in New York City, and any need that may exist for increased facilities for free treatment.

RESOLUTIONS ADOPTED BY INDIANA STATE DENTAL ASSOCIATION.

The following resolution was unanimously adopted by the Indiana State Dental Association at its sixty-second annual convention assembled in Indianapolis May 17-20, 1920.

Whereas, Clubs are being organized in various cities, the object of which is to promote a high standard of business and professional ethics, and

Whereas, One or more men, with the degree of Doctor of Dental Surgery, or elected to represent the Dental Profession in said clubs, and

Whereas, In order that the Dental profession, be represented by the highest standard of ethics and efficiency we recommend that said representatives, be those recognized by the established dental societies, therefore be it

Resolved, That the Indiana State Dental Association recommend that all representatives of the dental profession in said clubs shall be members of the District, State, and National Dental Association, in their respective locations, and be it further

Resolved, That a copy of these resolutions be sent to the officers of the National and International clubs of this character and to the officers of the State and National Dental Association, and be it further

Resolved, That a copy of these resolutions be published in The Journal of the National Dental Association.

DENTAL CORPS ORDERS FROM WAR DEPARTMENT.

Maj. Claudius G. Baker to Camp Jackson, S. C., for duty.

Capt. Harold M. Whitney, honorably discharged.

First Lieut. Elmer H. Nicklies to Los Angeles, Calif., and report by telegraph to commanding general Western Department for assignment to duty and station.

—*Army and Navy Register, May 29.*

Maj. Arthur J. Hart, having been found by an Army retiring board incapacitated for active service on account of physical disability incident thereto, his retirement from active service is announced; proceed home.

Maj. Harlan L. Thompson, to Denver, Colo., general hospital 21, for duty.

Capt. Roy M. Kisner, to Fort Sheridan, Ill., general hospital 28, for duty.

Capt. Leslie D. Baskin, to Camp Dix, N. J., for duty.

Resignation by Capt. Curtis W. Hallam accepted.

1st Lieut. William J. Crydermann, to Southern Department for assignment to duty and station.

1st Lieut. Milton J. Damlos, to Camp Meade, Md., for duty.

—*Army and Navy Register, June 5.*

Maj. Donald W. Forbes from Hawaiian Department to United States and report.

Maj. William A. Squires to Camp Dix, N. J., for duty.

Capt. William S. Shuttleworth to Fort Leavenworth, Kans., disciplinary barracks for duty.

Resignation by Capt. Edward A. Thorne accepted.

First Lieuts. Charles Wallach, Frank W. Fenzel, Albert G. Coffey, honorably discharged.

—*Army and Navy Register, June 12.*

Capt. George A. Cloutier, Jr., report by wire to commanding general Northeastern Department for assignment.

Captain Milton A. Price, to Dayton, Ohio, McCook Field, for duty.

Capt. James B. Eastman and 1st Lieuts. Oscar R. Reed and John P. Cooper, honorably discharged.

—*Army and Navy Register, June 19.*